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THE

FAMILY MAGAZ

OR

MONTHLY ABSTRACT

OF

GENERAL KNOWLE

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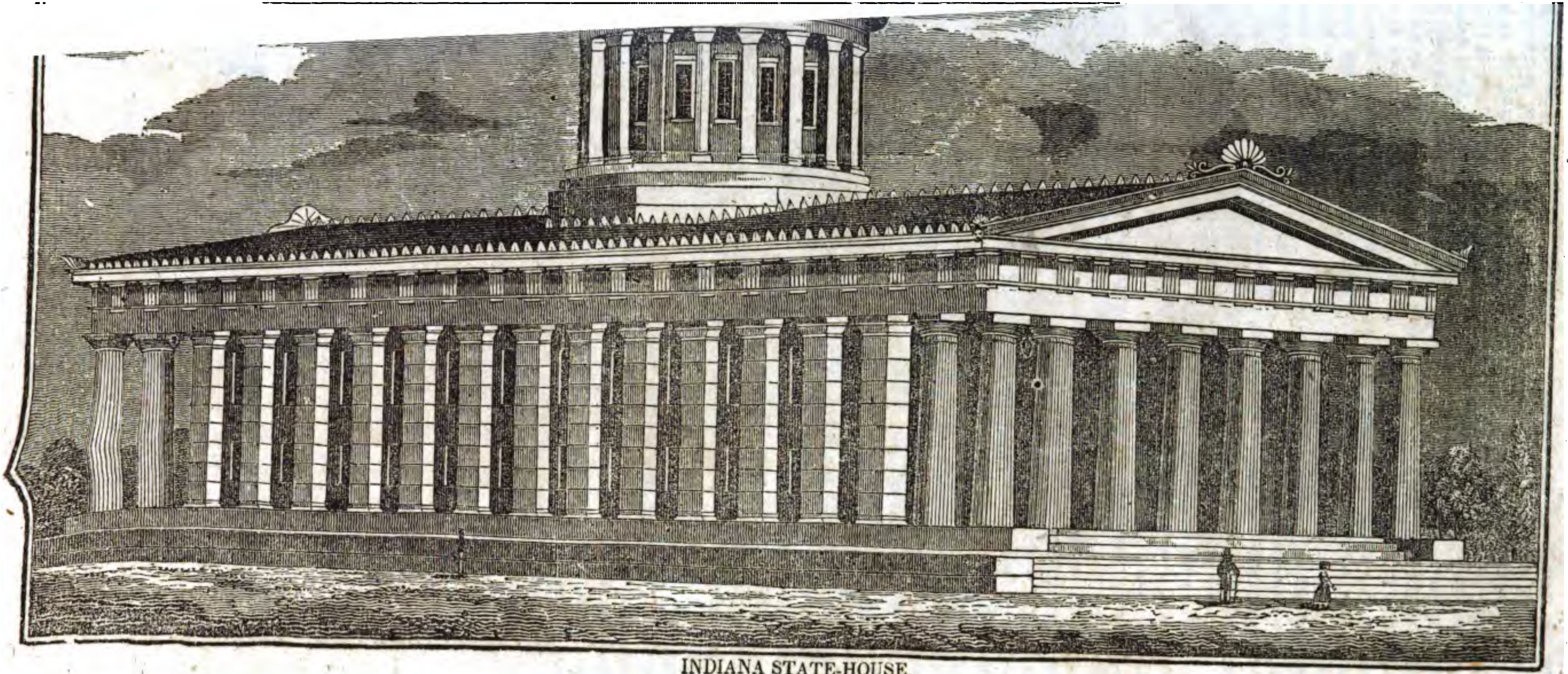


INDIANA STATE-HOUSE.

THE FAMILY MAGAZINE

1837—8.

CAPITOL OF INDIANA.

This edifice is situated in an open square in the city of Indianapolis, the capital of Indiana. It is of the robust, or ancient Dorick order, octastyle, of the amphi-prostyle, pseudo-peripteral species, and admitting, from its insulated position, of a peribolus, or platform around it, may be considered the nearest approach to the classical spirit of the antiquo *yet instanced in the Western hemisphere,* while the novel introduction of antae upon its flank, boldly projecting from the wall, serve to conceal, in a foreshortened view, the many windows, which would, without such projections, give the building the character of a factory, as also an appearance, and the reality of instability, in the highest degree inharmonious with the surrounding parts, when introduced in a wall crowned by so ponderous an entablature.

As a matter of taste, the propriety of adding a dome or cupola to an edifice of so simple a character as the Grecian temple, is with some reason doubted. This addition might be allowed to interfere with the sober dignity which should reign in a *sacred* edifice, yet, in the church of the French Protestants, N. Y., *no one* can wish the dome omitted; and, in the capitol of Indiana, this appendage gives the impress of a *character* suiting its destination, and receding from the front, the pediment retains its full value, while to the distant observer, the dome and lanthorn, rising proudly above surrounding objects enhances the richness of the scene, while the more simple form is perhaps shrouded by intervening objects.

The building is eighty feet wide, and one hundred and eighty feet long, and contains rooms on three floors: a basement below the level of the portico and peribolus, and two stories above. The great halls of legislation, chambers of the Senate and Representatives, are on the upper floor, which renders them lofty in the ceilings, and the committee rooms, which are on the first floor, more accessible by the free passage from end to end of the building, which passage could not be admitted were the great rooms below. The Senate chamber is thirty-six feet by seventy feet, and the hall of Representatives, forty-eight by seventy, or near these dimensions, and the Rotunda, thirty-six feet, with dome and sky-light. The halls are rectangular oblongs on the plan, but have a semi-hemispherical concavity, or half dome in the ceiling, resting on a semicircular colonnade, which forms the " *bar of th*
termed,) within which the members' se
all facing inward, fronting the focal poi
er's chair. This general arrangement
the laws of Phonics,) is favourable to
and inflection of sound, which, here n
is yet found free from reverberatio
clear. It also affords variety, with a
character to the apartment, while the
tribute an additional support to the rc

As an exhibition of classical a
have in the capitol of Indiana, each
ders appropriated by Greece: the
and Corinthian:—the robust, chaste,
In the body of the edifice, we have
to the Parthenon of Athens; in t
rich Ionick of the Erectheion; in t
cular temple of Vesta, at Tivoli; a
a model of the Corinthian monum

Nothing tends more to refine
divest it of all taint of vulgarity th
izing both the eye and the mind
ite forms of beauty transmitted to
of ancient art; and nothing is b
elevate our ideas, than frequen
structures, distinguished either b
their dimensions, or the harmony

The buildings of the ancients
what the works of nature are
other arts; they serve as mode
imitate, and as standards by
judge: and sufficient field is o
genius for original design, and
and taste in the judicious *arrang*
of ancient members, and in the
riours; and, according to Rey
seen as much in singling out
examples in the practice of t
play of original thoughts, or
tion:" and we may safely say
new associations of ideas sho
investigation, to be equal or
been accomplished, as it is
imitator of good things, than

The capitol of Indiana w
and finished in 1835, fron
Town, and Alexander J. D
seventy thousand dollars.

HOMER VILLAGE.

This place derives its name from the town in which it is situated. The towns, generally, on what was called "the military tract" in this part of our state, when originally surveyed, received the names of distinguished ancients; the subdivisions have mostly been named in honour of Americans.

This village began to be settled in 1796 by people from New England. There were a few families who had previously settled in other parts of the town. The first house (a log-house,) was built in that year by James Moore; others were shortly after erected. The first *frame* house was put up in 1799 by Major E. Stimson on the ground now occupied by the third house (two stories high, four chimneys,) from the left one, see cut. The inhabitants had then to go thirty or forty miles to get their milling done. A grist-mill was ere long built, and was considered a very important acquisition to the settlement. It served the people for a mill and also for a place to hold religious meetings, until they could erect a house large enough for that purpose. The first sermon preached in this town was delivered by the Rev. Dr. Hillyer of New Jersey, about the year 1794, at the raising of a log barn on the hill east of the village. The reverend gentleman was on an exploring tour for the purpose of viewing a lot of land of which he was the owner, and which is still called by his name; falling in company with the men who were erecting the barn, while there he preached to them, standing by the side of a tree, his auditors being seated about him in the form of a kind of semicircle. The tree was marked for the purpose of perpetuating a knowledge of the location of the event. Subsequently the tree was cut down by an owner who considered it of more value to him, to use it for timber or fuel, than to let it stand as a memento of past events.

From the first settlement of this place, it has continued to increase gradually in population and business. New accessions have been made yearly by emigrants from Massachusets and Connecticut, and some from the eastern part of this state. It was with much difficulty that they made their way through the wilderness to this then new settlement. The early settlers were industrious, frugal, and moral; and a large proportion of them, religious people, who were proverbial for their friendly intercourse, and acts of kindness and hospitality to each other and to "new comers." Several of the first inhabitants have remarked to me, that, notwithstanding the deprivations they had to endure, those were happy days. Under God, we are indebted in no small degree to those Pilgrims for the distinguished, religious, moral, and intellectual privileges, which, as a people, we now enjoy, and for the good order that prevails throughout our community.

Homer village is pleasantly situated in the very rich and fertile valley of the Tioughnioya. The west branch of this stream passes through the village, and adds much to its beauty and business. The village extends from north to south about a mile; its principal (Main) street passes through the length of it, running a south-westerly direction, and is to a considerable extent lined on either side with shade-trees, and through the whole distance with flagged side-walks. This street is intersected by others at right angles, the side-walks of which are also flagged. The houses generally exhibit in structure and finish, architectural neatness and taste; some of them are quite elegant.

In the centre of the village is the green, containing six acres of land, and enclosed with a neat and durable fence. Here the publick buildings are situated, standing in a direct line, and make a very attractive and commanding appearance. First in order on the north, is the Episcopal church; (see cut) second, Cortland academy; third, the Congregational church; fourth, the old academy, now the Methodist church. A view of this, in the cut, is obstructed by Mechanicks' Hall, its steeple appearing to stand on the ridge at the east end of the hall; and fifth, the Baptist church. From the high ground in the vicinity, the village exhibits to its beholder an air of neatness and unostentatious elegance, not surpassed by any village in western New York.

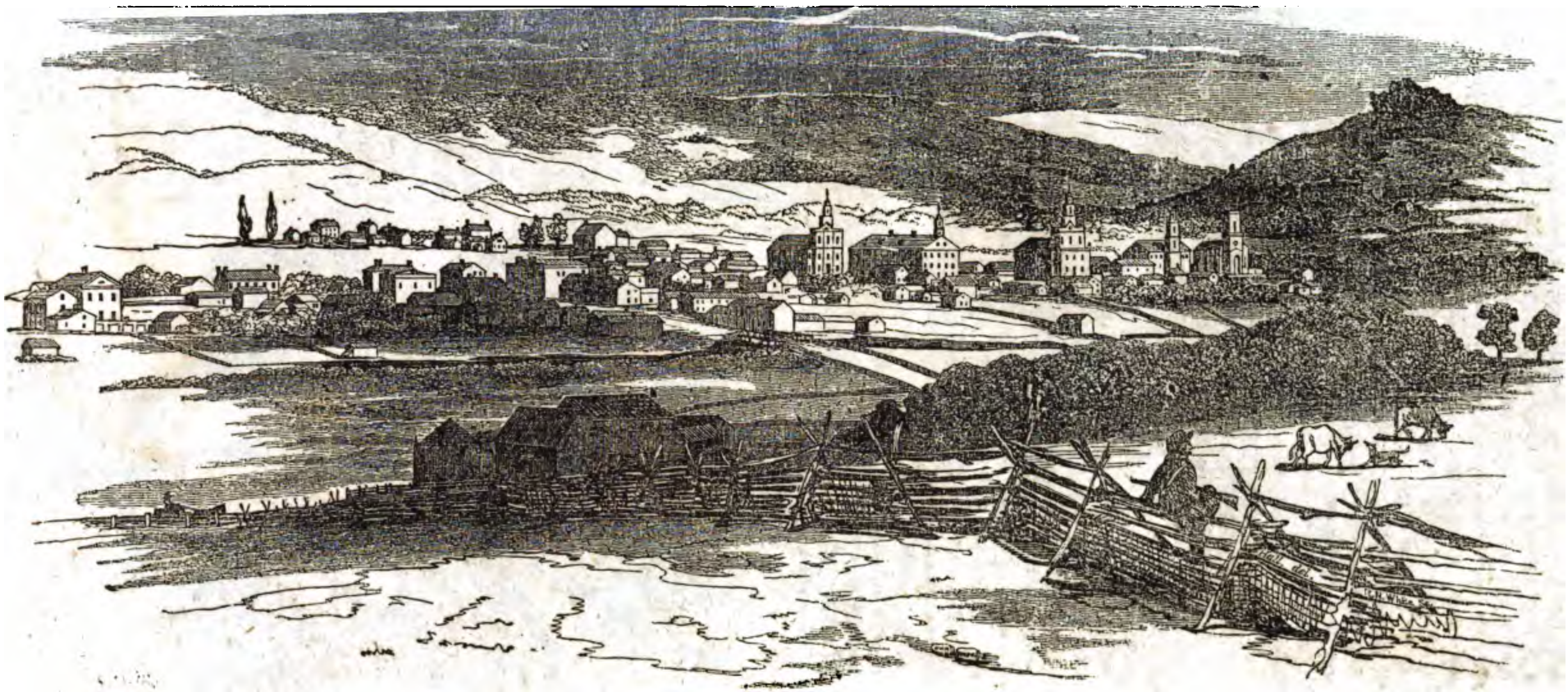
The inhabitants are generally New Englanders and their immediate descendants, and evince some of the peculiar characteristicks of the people in their "father land." The population of the village is eleven hundred, and has increased during the last ten years at a ratio that will double every ten years. The village was incorporated in 1835, and includes the whole of lot No. 45, in the old township of Homer.

The Homer cotton factory does an extensive business, and manufactures large quantities of cloth for calico-printers. The capital invested is $40,000 and is owned almost exclusively by persons residing in the village and vicinity.

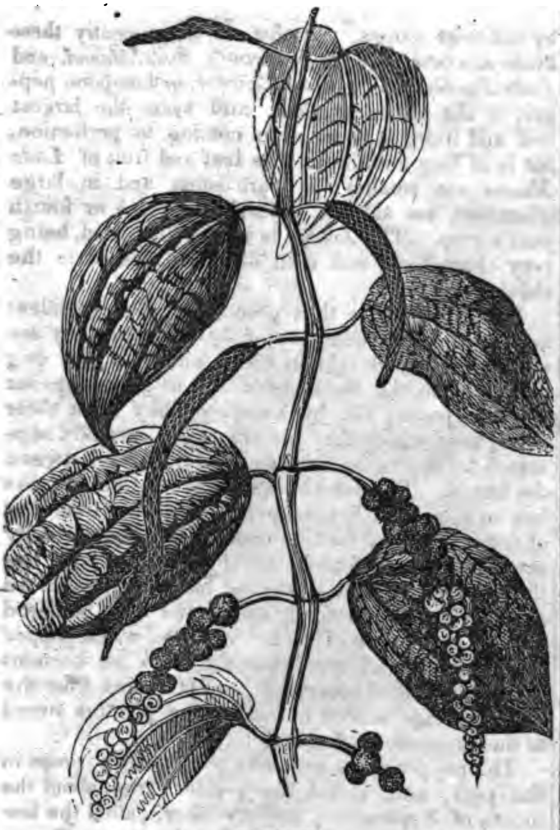
Other manufactures are prosecuted to considerable extent. Flour, linseed oil, leather, shoes, woollen cloth, axes, scythes, edge tools, stone-ware, ploughs, castings of various kinds, tin-ware, carriages, furniture, combs, bread, crackers, &c. &c. *There is no distillery in the town;* previous to the commencement of the temperance reform there were five or six. There is one brewery. A great amount of business is done by the merchants. There are now in the village three clergymen, five lawyers, and four physicians. There are three public and two private schools, where the common branches of education are taught.

Cortland academy has been for some time one of the most flourishing institutions of the kind in the state. It has six teachers, (four gentlemen and two ladies) and as many departments. The course of study pursued in this institution is designed to present a thorough preparation for admission to college, and for active business in the various spheres in which the youth of our country are called to act. It is furnished with a valuable philosophical and chymical apparatus, an extensive and valuable cabinet of minerals and geological specimens, and a library. Lectures are delivered on chymistry, natural philosophy, and geology. The healthful situation of the institution, the very few inducements to vice, the moral character of the community, and the assiduous attention of the teachers to the duties devolving on them, exert a very favourable and manifest influence over the habits of the students. This institution was founded February 2, 1819. The whole number of students who attended during the year ending December 1836, was 366—males 211, females 155. S. B. Woolworth A. M. principal.

S. S. B.



VILLAGE OF HOMER, N. Y.



PEPPER.

The most common and most useful of all spices—pepper, is divided into two kinds, white and black, which were formerly supposed to be the produce of two different sorts of trees, but it is now known that the variation in colour and quality arises from the manner in which the berry is prepared for exportation. Pepper is the seed of a climbing plant called *Piper nigrum*, which is extensively cultivated in Sumatra, and on the coast of Malabar; it is common also in most of the East India islands. The stem is of hard wood, covered with a smooth bark; it is also knotted or jointed, and from each knot it will, if allowed to run along the ground, put forth roots. The leaves are placed singly at the joints of the branches; they are of an oval form, but having a sharp point; extremely smooth upon the surface; of a dusky-green on the upper side, and paler underneath. They are marked by seven nerves or ribs running lengthwise through them. The flowers grow in branches resembling those of the currant-tree, but longer and less pliable; the corolla is small, white, and monopetalous. This is succeeded by the berries, which are at first green, but turn to a brilliant red when ripe, and if not gathered at the proper period they soon fall. As all the berries on a cluster do not ripen at the same time, a part of them would be lost in waiting for the perfection of the later ones, to prevent which sacrifice, it is customary to gather the whole bunch as soon as its earliest fruit is ripe, these being probably the finest berries; as is the case with our currants, the black sort especially. Being spread out upon mats, or spots of hard, clean ground, for seven or eight days, the berry dries, and, losing its brilliancy of teint, acquires the black shrivelled appearanc
presents to us. That fruit which is pe
ture when gathered will shrivel the least;
too soon, before the berry has attained a
gree of hardness, it will in the course
time, and by its removal from place to pla
mere dust. It appears to be a great ab
bounty of nature, that so much of this us
should be lost by the custom of gathering
bunch at once; but so great is the care r
the culture of the pepper-vine, that even i
where there are plenty of hands to wo
grounds, the labour of gathering each b
rately would be so great, as not perhaps t
pensated by the increase of quantity.
berries are perfectly dry, they are clean
process which resembles winnowing;
quality is ascertained by rubbing them bet
hands; when, if the fruit be sound, little o
will be produced; but if the berries have b
ered too young, or suffered to lie too long
ground in moist weather, they are easily r
dust.

The pepper-vine requires a rich, moist
overflowed by water, and not exposed to
sun; spots which have been covered by o
whose rotting trunks, and falling leaves s
place of manure, are generally chosen fo
plantations. These spots are likewise sel
the industrious natives for their rice plantati
being cultivated for this grain one year,
generally deserted for fresh ground, and t
offer very eligible spots for the growth of
the fertility of the soil not being exhausted,
young wood which springs up being adva
as a means of shade. The ground is mark
regular squares of six feet, the intended di
the plants, and the next business is to p
chinkareens. These are cuttings of a quick
ing tree of the same name, which are plan
eral months before the pepper-vine, in order
as props to the latter. Sometimes they are
so long as six feet, but it is more common t
small cuttings, as they are found less liable
with crooked stems than the older plant
sorts of this plant are used: the prickly chi
which bears a white flower, and is arm
thorns or small spines, by the help of w
pepper-vine is enabled the more easily to as
and the bitter chinkareen, which has a brow
blossom, and a smooth stem. Many plante
the latter, althought it is more difficult to
pepper-vine to it, because the elephant, of
structive enemy to the gardens, will not to
account of its bitter taste; while he is not
by the spines from devouring the other
When the chinkareens have been plant
months, the most promising perpendicular
reserved for growth, and the rest are taken
when they have attained the height requ
heads are cut off.

It has been said that the growth of the
plant is retarded by the loss of that nou
which the chinkareen absorbs; and in cons
of this opinion, the vine in Borneo, and son
of the Eastern islands, is supported by pole
do not vegetate. In the Circars, on the wes
of the Bay of Bengal, poles formed of the

wood tree, and of the *Erythrina corallodendron*, are used. But it appears that the evils attendant upon this plan counterbalance its advantages; as the poles must be renewed at least every two years, and the plants are liable to severe injury in removing and replacing them; besides, they do not enjoy that shelter from the burning sun, which is afforded to them by the heads of the chinkareens. Also, if it be correct that trees act as siphons, attracting from the clouds, and transmitting to the earth, a part of the nourishment which they draw from it, the use of the chinkareens has a further advantage. Great care is taken to keep the pepper-grounds free from weeds and shrubs; but in the months of June, July, and August, the earth is suffered to remain covered with long grass, which mitigates the effects of the violent heat, and preserves the dews to the plants.

The pepper-plants are mostly taken from the shoots which spring from the foot of an old vine; these run along the ground, and from almost every joint strike roots into the earth, sending up perpendicularly a single shoot; one of these is sufficient to form a plant. Two vines are generally planted to one chinkareen. For three years they require but little attention; at the end of that period, they ought to have attained the height of eight or ten feet, and then the operation of *turning down* is practised upon them in the following manner: Being cut off at about three feet from the ground, and carefully loosened from the props, they are bent into the earth, in such a manner as to bring the upper end of the stem to the roots, thus forming a kind of circle. By this process, fresh vigour is given to the plants, which, if allowed to run up without cutting, would exhaust themselves in leaves, and produce but little fruit. The vines are *turned down* at the season when the clusters begin to ripen, and great nicety is required to choose the exact time, as, if it be done too soon, the vines will not bear for two or three years afterward, and if it be delayed until the fruit be gathered, the produce is likewise retarded. Sometimes two or three of the strongest shoots from a vine are laid in the ground for a short distance, and springing up, are still brought back to the same chinkareen; by this means extracting nourishment from a greater extent of soil.

The vines generally begin to bear in three years from the time of planting, but their produce is retarded for one or two years, by the custom of turning down. From this time, the plants become gradually more prolifick, till they have attained their seventh or eight year, when the garden is esteemed in its prime; thus it remains for two or three years, when the plants begin gradually to decline, until they are too old to bear. Fruit has been gathered from plants of twenty years old, but this is very uncommon. A man and woman may with ease attend to a garden of a thousand vines, and may subsist upon the produce of their labour. A plan often pursued is, in the first season to raise a crop of grain upon the ground. When cleared the chinkareens are planted, and the *paddy* or other grain sown; and by the time this is reaped and its refuse cleared away, the props are of sufficient size to receive the pepper-vines. Thus a maintenance is obtained for the first season at least.

The natives of Sumatra divide the pepper into three species, which are called at different places by different names. In the Rejang country these kinds are termed *Lado Cawoor*, *Lado Manna*, and *Lado Jambee*. The *Lado Cawoor*, or Lampoon pepper, is the strongest plant, and bears the largest leaf and fruit; it is slow in coming to perfection, but is of long duration. The leaf and fruit of *Lado Manna* are smaller; it bears soon, and in large quantities, but seldom beyond the third or fourth year's crop. The *Jambee* is almost discarded, being very short-lived, and with difficulty trained to the chinkareen.

White pepper is thus prepared. The soundest and best grains being carefully selected, they are steeped for a fortnight in water, either in pits dug purposely on the banks of rivers, or in swamps or stagnant pools; till, by swelling, they burst their skins, from which they are afterward carefully separated by drying in the sun, and rubbing between the hands. The outer husk removed by this process has an aromatick flavour, perfectly distinct from that of the heart; and for this reason black pepper is by many persons preferred; but the white pepper has this superiority, that it can be made only of those grains which are perfectly sound, and were gathered exactly at the time of maturity. The white pepper costs considerably more than the black, on account of the process of bleaching; and still more from the difficulty experienced in making the planters attend to the suggestions of strangers.

The pepper-vines generally produce two crops in the year; one, called the greater crop, about the month of September; and the other, called the lesser, or half crop, in March. But these seasons are subject to great uncertainty, as the monsoons in Sumatra are not so strictly periodical as on the western side of India. Sometimes in particular districts, pepper may be gathered in small quantities during the whole year, while in others the produce is confined to one crop. Long-continued droughts injure the plants, and retard the fruit. The natives in this case strip off the leaves, and by thus directing all the nourishment which the plant obtains to more important services, blossoms are soon produced in abundance.

The pepper is brought down from the country on rafts composed of rough timbers or large bamboos, the cargo being carefully protected from moisture. Much strength and skill is exerted in the difficult navigation of the Sumatran rivers; but, notwithstanding the great dexterity of the natives, the rafts are often overset, and sometimes dashed to pieces by the rocks and trunks of trees which obstruct their course. The pepper is conveyed from the coast to vessels lying at anchor to receive it, in open boats, which are hauled up on the beach, and there loaded; they are then pushed off through the surf, which is extremely violent, and before the boat reaches the ship the pepper has generally been completely immersed in sea-water; a circumstance which it is said does not detract from the excellence of the spice.

It is remarkable that pepper, which is to us a necessary ingredient in our dishes, is not mixed by the Sumatrans in their food, because they consider it heating to the blood; they flavour their rice upon which they chiefly subsist, with Chili or Cayenne pepper, which they say is not heating; and with tumerick, lemon-grass, and the pulp of the cocoanut.

[A Chinese Wedding.]

A CHINESE WEDDING.

Singapore, November 28th, 1835. HAVING been informed that a daughter of one of the principal Chinese merchants was about to be married, I solicited an invitation to attend and witness the ceremony. On arriving at the house of the bride's father, I was politely received by him, and invited to a seat in a room adjoining that in which the ceremonies were to take place, there to await the arrival of the bridegroom. As he did not arrive till nearly half an hour had elapsed, I improved my time, in examining with the father, the room where the daughter was to be married.

Before the door which led into the street was a screen. On the right hand of the door, in front of a window, stood a narrow table, elevated on a bench and some old bricks, and covered with fruits and sweetmeats, having two or three small wax candles burning on each end of it. Beyond this, toward the interiour of the house, was a mat spread upon the brick floor, and still another smaller mat, of a finer quality, and colours. On the side of the room opposite to the window and table above mentioned, was the family god, a large picture of a deified hero, and under it the family altar. This was fitted up for the occasion with a variety of showy ornaments, and sacrificial articles. Next to the wall was a screen about two feet square, formed of small square pieces of marble, each having some painting upon it set in a wooden frame. At each end of this stood a waxen candle about three feet high, and three inches in diameter at the lower end; these were already lighted. Near each of them were several

curious articles, composed
meats, fruits, &c., fixed o
wire ; and between them
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of it was composed of
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stitched together in the
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some of which were cov
dried fruits, and others w
the top of the pyramid o
numerous branches cove
and sparkling tinsel. T
curious and gaudy orna
this altar and the carpet
seven chairs, with cl
thread spread over the
its back toward the fam
right and left in front
middle. The walls o
papers bearing various
were expressive of go
about to be married.

When I entered, the
room preparing for t
word was given, " *com*
of the parties put on
ment over his usual d
was ready. Soon it
ing ;" and the young
garment of figured li
feet. Again they
pleted his dress by p

figured satin, and a pyramidal cap with red hair fixed in the apex, and descending on all sides nearly to the rim. This person was the "receiver of guests."

The sound of musick was now heard, and they prepared "to meet the bridegroom." He came in a procession preceded by musick, dressed like the "receiver of guests," and attended by six companions, each bearing an immense umbrella, and other persons bearing poles of bamboo with branches and green leaves upon them, and sustaining between each pair a piece of red cloth about three yards long. On his arrival near the door, a kind of paper basket filled with Chinese crackers was carried out, and the crackers burned with great uproar. The receiver of guests met him at the door and performed the usual ceremony. As he entered the door, a nephew of the bride, splendidly dressed in embroidered satin with much tinsel and a little gold, advanced and presented him an orange. The receiver of guests then conducted the bridegroom to the carpet already described, and placing him at one end, and himself at the other, they bowed to each other, and then by three measured long steps they exchanged places and bowed again; and then at last he conducted the bridegroom to his seat at the head of the table, and pretended to arrange the cloth for him. They here bowed to each other over it, then he went to receive others, leaving the bridegroom standing, and performed the same ceremonies with each of the six friends of the bridegroom; they then took their places, bowed, and sat down.

Tea was then brought, three cups in succession, and finally betel-nut. Soon after these were removed, my attention was drawn toward the interiour of the house, where the bride made her appearance splendidly dressed and veiled, and attended by several females. She advanced with downcast eyes, and a very slow step, designed doubtless to imitate that of the little-footed ladies of China. On coming to the threshold of the room, she paused, and waited without the motion of a muscle, or any expression of sentiment in her face, the coming of her future companion. As for him when he knew she had come in sight, he cast an eager eye sidewise to catch a glimpse of her as soon as possible. He very soon left his chair, walked round before his companions to the door where the bride stood, and they bowed to each other, she raising her hands slowly to the level of her shoulders, and letting them fall as slowly, and with the same immoveable, inane countenance as before; and then turned and walked away. He bowed less deliberately, then turned to his companions with a smile of satisfaction playing on his countenance, gave them a slight bow, and followed the bride.

Thus ended the ceremony for to-day. It is to be renewed again after two days, and at the house of the bridegroom, whither the bride is to be conducted. When the ceremony was over, I conversed a little with one of the bridegroom's friends who had acted the part of negociator for the parties, (i. e. for the fathers of the bridegroom and the bride,) before the wedding. He told me the bride had been in the inner apartments for eight or ten years; and that the bridegroom had never seen her before. He said also that she could not read.

30*th November*. Went to the house of the bridegroom to see the conclusion of the wedding. The arrangement of the room where the ceremonies were to be performed, was very similar to those at the house of the bride's father. On a table standing before the family altar, were placed at one end more than twenty female garments, and a pair of shoes; on the other end, slips of red paper enclosing dollars with names written upon them; and on the middle, a waiter on which was laid a belt, said to be wholly of gold, and to have cost two hundred dollars, a splendid large buckle for it, a handsome bosom-pin, and several rings. All these were presents to the bride from several relatives and friends. The names on the papers were the names of the donors, who gave as many dollars as their abilities allowed, or disposition prompted them to do. The table was covered with a red velvet cloth, embroidered with gold thread; and at each end of it stood a chair with a similar cloth upon it.

While I was waiting the arrival of the procession, two coolies came in, bearing between them a stout pole covered with cajang, (a kind of long leaf like flag-leaves,) stitched together, under the cover of which was something more substantial; I soon ascertained that it was a lady, who was brought in this style to the wedding. The carriage consisted merely of the cajang with a cloth, the ends of which were tied to the pole, and the middle, hanging down two or three feet and spread out, afforded a seat for the lady. Several others were brought in the same way; and as the carriages seemed to have been thoroughly used, I conclude this is the method in which they are usually conveyed from place to place. A more uncomfortable and degrading method could scarcely be imagined. But Chinese custom and opinion do not allow them to be seen, and they are not considered worthy of a better carriage.

The report being made that the procession was near, a man in the dress of ceremony like that worn the other day by the receiver of guests, began to bow and worship: first toward the altar at the window, to the gods, to whom he bowed ten or twelve times with his head to the floor; then toward the family altar, to the family relatives, to whom he bowed four times. Before commencing this, he lighted several incense-sticks, and bowed slightly with them in his hands, and set them in a dish of ashes upon the altar toward which he bowed; and also burnt incense enough to fill the room with smoke. The procession was like that of the former occasion, but less numerous, and the bridegroom and the bride came in palanquins; he, attended by the little boy who presented him the orange on the 28th, and she, by three little girls of the same age, splendidly set off with embroidered silk of very brilliant colours, and gaudy head-dresses.

The bride was assisted to descend from her carriage by her attendants, and on coming near the door was presented with an orange by a little girl dressed like those just mentioned. At the door, the bride and bridegroom bowed to each other, and took their places on a mat between the two altars, first facing that near the window, towards which they both kneeled, and he bowing with his head to the ground, while she performed an equivalent ceremony by setting back upon her feet in a very graceful manner. They then rose, and knelt again, repeating the ceremony several times, and then turning toward the family altar did the same. Her attendants carefully arranged the skirts of her long garments as she knelt, that they might not receive injury, nor entangle her feet. Her eyes were downcast, her face uncovered, and her features as immoveable as if made of marble. He appeared rather careless and impatient to be done with the ceremonies.

After their worship in this room, they went into the interiour of the house, and performed similar prostrations there. They then returned to the outer room, and their relatives began to come forward to receive their reverence. They both knelt before each of them. First came three or four men, then as many women, each of whom on going out touched the hand of the bride; then came an old man, an elder brother of the bridegroom's father, who showed much kindness in his manner toward the bride, and helped her to rise from her knees; then followed several women, some of whom were dragged into the room by force, as they manifested much reluctance from real or pretended bashfulness. The bridegroom frequently went into the inner room to call for these persons, and the poor bride stood motionless in her place awaiting his return, till some of the bystanders pitying her weariness, brought her a chair in which she sat when at leisure.

During the intervals between these ceremonies, I had opportunity to observe the appearance of the bride. She was about eighteen years old, of the middling stature of females here, though shorter than European ladies generally are. Her face was pretty enough, but rather too wide, and destitute of expression. Her beautiful black hair was tastefully done up, and ornamented with white and artificial yellow flowers, and encompassed by a tiara of black velvet, on which were eight little yellow images of "pa seen," or eight genii, which they would have people think were gold. Her dress was embroidered satin of different colours, red, yellow, white, and green; she wore fine white stockings, and a pair of Chinese shoes, the fore part only of which being seen when she walked, they made a very clumsy appearance. When the ceremonies were ended, they both went into the interiour apartments, and took tea and other refreshments. While there, I saw for the first time some movements besides those required by the rules of ceremony. After a few minutes they came out and took their palanquins to return to her father's, bowing at the door. The carriage of the bride moved fast, preceded by servants bearing the presents of clothes, &c., noticed above. The din of musick continued during the movement of the procession, as well as during all the ceremonies of this and the former day, and was quite insufferable. On reaching the father's house, they bowed at the door, and proceeded to the upper rooms. She soon returned, and took out the upper stick of the leaf-made pyramid with its flowers and spangles, and bore it away; thus signifying the completion of her wedding, and the change from her former to her present relations. The bridegroom soon made his appearance again, and seated by the receiver of guests, as on the 28th, and joined by five or six relatives, each seated with the same formalities, who partook with him of the same refreshments which were brought forward. This concluded the ceremonies of the day, and the wedding was considered as completed.

Chinese Repository.

NATURAL HISTOR

THE PELICAN.—*Pelecanus Onocrotalus.*

The family of swimming birds to whic
cans give name, is distinguished from all
subdivisions of that order by the extens
membrane connecting the three anterior t
a manner as to include the posterior also
thus brought forward as it were into the s
with the rest. The birds of this family co
offer the most perfect examples of a compl
bed foot. They were all regarded by Ra
ing a single genus, from which Linnæus s
ly withdrew the tropick-bird and the anhi
types of two new generick forms. Brisso
naturalists have with great propriety carri
ther the principle of subdivision adopted
us; and the genus Pelecanus of the latte
dismembered into four parts, of which t
rant, the pelican, the gannet, and the fr
each distinguished by essential modifica
of structure and habits, form the respectiv

In the true pelicans, the bill is of gre
broad in proportion, flattened from above d
and perfectly straight, with the exception
hook at the middle point of the upper man
edges of both mandibles are entire, being
free from denticulations; and the lower is
two long slender flexible branches, united
only at the tip, and having the intermedi
occupied by a widely dilatable membrano
which extends for some distance down the
of the neck. The middle part of the upp
ble forms a slight projection, bounded on
by a narrow groove, in which, near the b
bill, are situated the almost imperceptible
the eyes are surrounded by a naked spac
ous with the base of the bill; the neck
long; the body large; the legs short, a
above the knee; and the wings of modera
with the first quill-feathers the longest. T
is so short as to have been entirely overl
the earliest writers.

The white or common pelican is, as t
these names implies, almost entirely white
its adult state. The quill-feathers, howev
are scarcely visible when the wings ar
are black; and the whole plumage, as
advances in age, exhibits a slight tinge
colour, which is sometimes mixed with a
light yellow. The bill is at this period
lead-colour on the sides of the lower man
along the middle line of the upper, which
ish in the intermediate part and reddish at
the hooked tip especially becoming of a b
The iris is deep brown; the naked part of t
flesh-coloured; the pouch of a light stra
the legs and web dingy-yellow, with some
leaden cast; and the claw black. On th
part of the head and neck the plumage i
more than a short close even down, gradu
ing into feathers, and forming on the back o
a kind of tuft which falls downward over t
part of the neck.

When fully grown the common pelican
the largest bird of its order, measuring fro
six feet from the extremity of i's long bill

[The Pelican.]

of its rounded tail, and from ten to twelve in the expanse of its wings. The extent of these latter organs, together with the extreme lightness of the bony structure, (which is capable of receiving a large quantity of air,) enable the bird to soar to a very considerable height, and to remain long upon the wing. Its bill, frequently sixteen or eighteen inches in length, and two or even more in breadth, has but little strength; but the fish on which it preys are immediately consigned to its pouch, in which it speedily accumulates a sufficient store to serve it for a meal, and then retires to some neighbouring rock to satisfy its voracity, which is by no means trifling, from the contents of its wallet. This part is so highly distensible as to be capable of containing from two to three gallons of water. It serves also as a reservoir for the food which the old birds bring home to their young, and which they disgorge into the throats of the latter by pressing the bill upon the breast; an action that has given rise to the fable of the pelican feeding its young with its blood. In the same manner the males supply the wants of the females when sitting.

The white pelicans nest in rocks, on the shores of the sea, of large rivers, and of lakes, in almost every part of the old world, excepting the most northern regions. Buffon gives a curious account of the manner in which they sometimes act in concert when in pursuit of their finny prey; and this fact is confirmed by some late observations of M. Roulin upon an American species. The latter adds that when a single pelican is in search of food it wheels round and round at the height of fifteen or twenty feet, and as soon as it perceives a fish, darts upon it from above with inconceivable rapidity, displacing the water around it for a considerable distance. Should it fail in its attack, which rarely happens, it rises again to repeat the same manoeuvre.

THE SEAHORSE.

These curiously-formed fish have obtained this name, from their resemblance, when they have been dried, to the outline of a horse's head in miniature.

The specimen here figured is represented in a dried state, and from its singular appearance, it is frequently found in the cabinets of the curious. It is taken in almost every quarter of the globe, and is generally from six inches to a foot in length; in colour it varies much, accordin to the climate in which it is taken, being sometimes of a bluish lead-colour, at others brown, or a greenish black: instead of being covered with scales, its whole body is enclosed in a series of hard rings, covered with numerous spines and hairs.

[The Seahorse.]

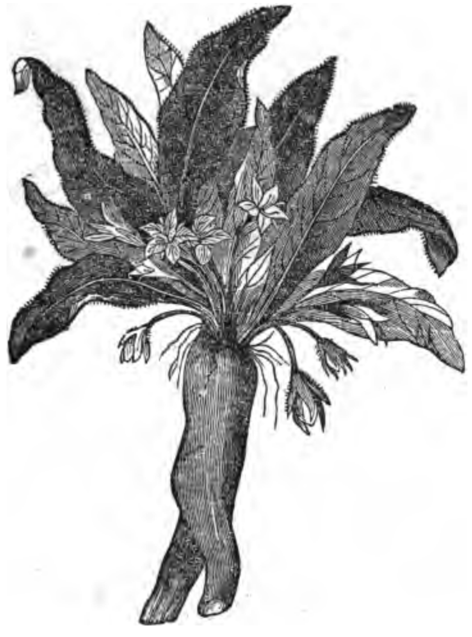
The ancients, attracted, perhaps, by its singular form, attributed many wonderful properties to it, which, with greater or less absurdity, have been related by most of their authors. At the present day, in Dalmatia, it is supposed to possess several healing properties, while on the other hand, the Norwegians consider it a poison.

THE HYSSOP.

[The Hyssop.]

THE hyssop of the Sacred Scriptures has opened a wide field for conjecture, but in no instance has any plant been suggested that at the same time had a sufficient length of stem to answer the purpose of a wand or pole, and such detergent or cleansing properties, as to render it a fit emblem for purification. Our wood-cut represents a shrub remarkable in both these respects, which is the *Phytolacca decandra*. We do not indeed assert that this was the individual species in question, but we have no doubt in our own mind that the hyssop belonged to this genus. The length and straightness of the stem form a characteristick of the several kinds of *Phytolacca* with which we are acquainted, affording an
obvious reason why the Roman soldier
sponge filled with vinegar upon hyssop, i
raise it to the lips of the Saviour, (John
The *Phytolacca decandra*, and other spec
genus, contain an enormous quantity of
that a hundred pounds of its ashes afford
pounds of pure caustick alkali; hence
striking illustration of that expression use
li., "Purge me with hyssop, and I shall
if we suppose that a shrub of this kind
The only doubt that hangs about the su
the North American origin of the *Phyt*
dra; but others are found in the old co
Aleppo, and in Abyssinia, which may
hitherto submitted to a chymical analy
swered the same purpose equally well.
elling in Mexico we met with an old
us that a kind of *Phytolacca*, which
near a cottage, was formerly used
female instead of soap, such was the
ture of the foliage. This unexpected
mation led us to think that the hysso
must have been allied to this Amer
Congoran, in structure as well as in
Phytolacca belongs to the family
which the barilla-plant forms a part,
the rest of its congeners in the exce
its flowers, which are of a fresh
disposed in elegant racemes or clust
are compounded of a circle of ca
fruits, closely joined together, and
die. The leaves are generally sm
shaped; and the stem is long, smoot
In short, there is a peculiar grace

the plant, which, in the case of *decandra*, renders it a great favourite in the garden. There exists a great similarity between the several species of the *Phytolacca*, so that an acquaintance with one species suggests a correct idea of the whole; for this reason the reader is presented a with figure of *decandra* as an average specimen. Two or three species are found in Oahu, Sandwich islands, which have the stem of an extraordinary length, and which, from its weakness, lies extended upon the vegetation around; and here and there supports a cluster of lovely flowers to beautify the wild waste amidst the mountains.



THE MANDRAKE.

Self-styled wandering Turks and Armenians are frequently met with in crowded cities vending rhubarb, tooth-powder, and various drugs and nostrums, exciting the curiosity of the idlers that group around them by exhibiting a root bearing a strong resemblance to the human form. This is the far-famed mandrake, of which such wonderful accounts have been related by both ancients and moderns.

This plant is the *Atropa Mandragora* of Linnæus, and grows wild in the mountainous and shaded parts of Italy, Spain, and the Levant, where it is also cultivated in gardens. The root bears such a likeness, at least in fancy's eyes, to our species, that it was called *Semi-homo.*

The word *vesano* clearly refers to the supposed power it possessed of exciting delirium. It was also named *Circæa,* from its having been one of the mystick ingredients employed in Circe's spells; although the wonderful mandrake was ineffectual against the more powerful herb the *Moly,* which Ulysses received from Mercury. This human resemblance of the root, which is moreover of a blackish hue and hairy, inspired the vulgar with the idea that it was nothing less than a familiar demon. It was gathered with curious rites: three times a magick circle was drawn round it with a naked sword; and the person who was daring enough to pluck it from the earth, was subject to manifold dangers and diseases, unless under some special protection; therefore it was not unusual to get it eradicated by a dog, fastened to it by a cord, and who was whipped off until the precious root was pulled out. According to Josephus, the plant called *Buaras,* which was gifted with the faculty of keeping off evil spirits, was obtained by a similar canine operation. Often, it was asserted, did the mandrake utter piteous cries and groans, when thus severed from mother earth. Albertus the Great affirms that the root has a more powerful action when growing under a gibbet, and is brought to greater perfection by the nourishing secretions that drop from the criminal's dangling corpse.

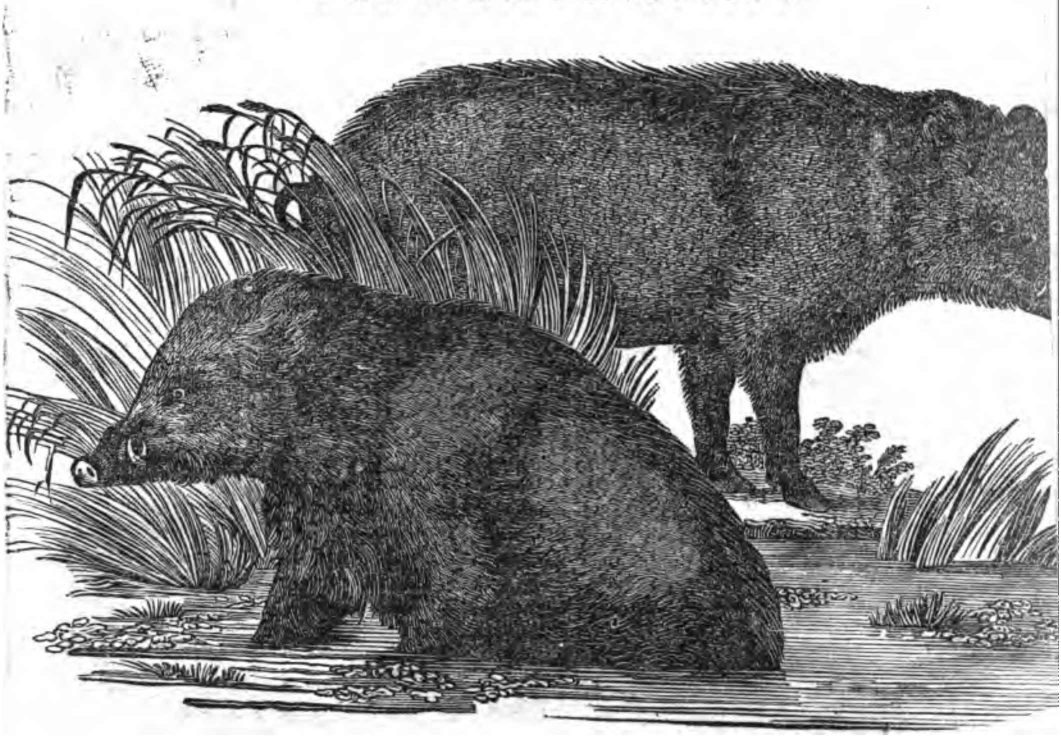
Among its many wonderful properties it was said to double the amount of money that was locked up with it in a box. It was also all-powerful in detecting hidden treasures. Most probably the mandrake had bad qualities to underrate its good ones. Among these we must certainly class the blackest ingratitude, since it never seemed to benefit the eloquent advocates of its virtues, who in general were as poor as their boasted plant was rich in attraction.

It was also supposed to possess the delightful faculty of increasing population and exciting love; and the emperour Julian writes to Calixines that he is drinking the juice of mandrake to render him amorous. Hence was it called *Love-apple;* and Venus bore the name of *Mandragontis.* It has been asserted by various scholiasts that the mandrake which Reuben found in the fields and carried to his mother Leah was the mandragore; but the *Dudaïm* which he gathered was not, according to all accounts, an unpleasant fruit, but is supposed to have been a species of orchis, still used in the East in love-philters and prolifick potions. The word *Dudaïm* seems to express a tuberculated plant; and in Solomon's Songs he thus describes it: "The mandrakes give a smell, and at our gates are all manner of pleasant fruits, new and old, which I have laid up for thee, O my beloved." Now it is utterly impossible, whatever may have been the revolution in taste since the days of Solomon, that the nauseous and offensive mandrake could have been considered as a propitiating present to a lady.

Frontinus informs us that Hannibal employed mandrake in one of his warlike stratagems, when he feigned a retreat, and left in the possession of the barbarians a quantity of wine in which this plant had been infused. Intoxicated by the potent beverage, they were unable to withstand his second attack, and were easily put to the sword. Was it the mandrake that saved the Scotch in a similar *ruse de guerre* with the Danish invaders of Sweno? It is supposed to have been the *Belladonna,* or deadly-nightshade, the effects of which are not dissimilar to those of the plant in question.

In the north of Europe this substance is still used for medicinal purposes; and Boerhaave, Hoffberg, and Swediaur have strongly recommended it in glandular swellings, arthritick pains, and various diseases where a profuse perspiration may be desirable.

Machiavel has made the fabulous powers of the mandrake the subject of a comedy, and Lafontaine has employed it as an agent in one of his tales



[The Wild Boar.]

THE WILD BOAR.

The boar generally lives to twenty-five or thirty years, if he escapes accidents. They feed on all sorts of fruits, and on the roots of many plants; the roots of fern in particular seems a great favourite with them: and when they frequent places near the seacoasts, they will descend to the shores and demolish the tenderer shell-fish in very great numbers.

Their general places of rest are among the thickest bushes that can be found: and they are not easily put up out of them, but will stand the bay a long time. In April and May, they sleep more sound than at any other time of the year, and this is therefore the successful time for the taking them in the toils. When a boar is roused out of the thicket, he always goes from it, if possible, the same way by which he came to it; and when he is once up, he will never stop till he comes to some place of more security. If it happen that a saunder of them are found together, when any one breaks away, the rest all follow the same way. When the boar is hunted in the wood where he was bred, he will scarce ever be brought to quit it; he will sometimes make toward the sides to listen to the noise of the dogs, but retires into the middle again, and usually dies or escapes there. When it happens that a boar runs ahead, he will not be stopped or put of his way by man or beast, so long as he has any strength left. He makes no doubles nor crossings when chased; and when killed makes no noise, if an old boar; the sows and pigs will squeak when wounded.

The season for hunting the wild boar begins in September, and ends in December. If it be a large boar, and one that has lain long at rest, he must be hunted with a great number of dogs, and those such
as will keep close to him; and the huntsman,
his spear, should always be riding in among
and charging the boar as often as he can, t
courage him; such a boar as this, with five
couple of dogs, will run to the first convenien
of shelter, and there stand at bay and make
as they attempt to come up with him. Ther
always to be relays also set of the best and
est hounds in the kennel; for if they are o
eager dogs, they will be apt to seize him,
killed or spoiled before the rest come up.
ting collars with bells about the dogs' nec
great security for them; for the boar wil
soon strike at them when they have these
rather run before them. The huntsmen
kill the boar with their swords or spears:
caution is necessary in making the blows;
very apt to catch them upon his snout or t
if wounded and not killed, he will attack
man in the most furious manner. The
give the wound with the spear, is eithe
the eyes in the middle of the forehead
shoulder; both these places make
mortal.

When this creature makes at the hun
nothing for it but courage and address
for it, he is surely overtaken and killed.
comes straight up, he is to be received
of the spear: but if he makes double
ings, he is to be watched very cauti
will attempt getting hold of the spear i
and if he does so, nothing can save t
but another person attacking him behin
this attack the second person, and the
attack him again: two people will thu

A Wild Boar Hunt,

to do with him; and were it not for the forks of the boar-spears that make it impossible to press forward upon them, the huntsman who gives the creature his death wound, would seldom escape falling a sacrifice to his revenge for it. The modern way of boar-hunting is generally to despatch the creature by all the huntsmen striking him at once: but the ancient Roman way was for a person on foot, armed with a spear to keep the creature at bay; and in this case the boar would run of himself upon the spear to come at the huntsman, and push forward till the spear pierced him through.

Hunting the wild boar, at the present time, is by no means a common amusement. The king of Naples, still encourages the breeding of those animals in his royal hunting grounds, for the purposes of the chase; in some parts of Africa also, and in the East Indies, this dangerous sport is still followed.

The cut on the opposite page, is from a picture by Horace Vernet: it represents a scene which occurred near Algiers, since it has been occupied as a French colony. The principal individual is Joussouf Bey, a man whose devotion to the French, and whose influence over the Turks, are well known.

LIVING COSTUMES.

The Bedouin Arabs in general, are small, meager, and tawny; more so, however, in the heart of the desert than on the frontiers of the cultivated country; but they are always of a darker hue than the

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custs, rats, lizar
Hence are they

[The Bedouin Arabs.]

lands and robbers on the high-roads: hence also their delicate constitution and their diminutive and meager bodies, which are rather active than vigorous. It may be worth while to remark, that their evacuations of every kind, even perspiration, are extremely small; their blood is so destitute of serosity that nothing but the greatest heat can preserve its fluidity. This, however, does not prevent them from being tolerably healthy in other respects; for maladies are less frequent among them than among the inhabitants of the cultivated country.

The Bedouin Arabs, are divided into tribes, which constitute so many distinct nations. Each of these tribes appropriates to itself a tract of land forming its domain; in this they do not differ from cultivating nations, except that their territory requires a greater extent, in order to furnish subsistence for their herds throughout the year. Each tribe is collected in one or more camps, which are dispersed through the country, and which make a successive progress over the whole, in proportion as it is exhausted by the cattle; hence it is, that within a great extent a few spots only are inhabited, which vary from one day to another; but as the entire space is necessary for the annual subsistence of the tribe, whoever encroaches on it is deemed a violater of property; this is with them the law of nations. If therefore, a tribe, or any of its subjects, enter upon a foreign territory, they are treated as enemies and robbers, and a war breaks out. Now, as all the tribes have affinities with each other by alliances of blood or conventions, leagues are formed, which render these wars more or less general. The manner of proceeding on such occasions, is very simple. The offence made known, they mount their horses and seek the enemy; when they meet, they enter into a parley, and the matter is frequently made up; if not, they attack either in small bodies, or man to man. They encounter each other at full speed with fixed lances, which they sometimes dart, notwithstanding their length, at the flying enemy: the victory is rarely contested; it is decided by the first shock, and the vanquished take to flight full gallop over the naked plain of the desert. Night generally favours their escape from the conqueror. The tribe which has lost the battle, strikes its tents, removes to a distance by forced marches, and seeks an asylum among its allies. The enemy, satisfied with their success, drive their herds farther on, and the fugitives soon after return to their former situation. But the slaughter made in those engagements frequently sows the seeds of hatred which perpetuate these dissensions. The interest of the common safety has for ages established a law among them, which decrees that the blood of every man who is slain, must be avenged by that of his murderer. This vengeance is called *Tar*, or retaliation; and the right of exacting it devolves on the nearest of kin to the deceased. So nice are the Arabs on this point of honour, that if any one neglects to seek his retaliation he is disgraced for ever. He therefore watches every opportunity of revenge; if his enemy perishes from any other cause, still he is not satisfied, and his vengeance is directed against the nearest relation. These animosities are transmitted as an inheritance from father to children, and never cease but by the extinction of one of the families, unless they agree to sacrifice the criminal, or *purchase the blood* for a stated price, in money or in flocks Without this satisfaction, there is neither peace nor truce, nor alliances, between them, nor sometimes even between whole tribes: "*there is blood between us*," say they on every occasion; and this expression is an insurmountable barrier. Such accidents being necessarily numerous in a long course of time, the greater part of the tribes have ancient quarrels, and live in an habitual state of war · which, added to their way of life, renders the Bedouins a military people, though they have made no great progress in war as an art.

Their camps are formed in a kind of irregular circle, composed of a single row of tents, with greater or less intervals. These tents, made of goat or camel's hair, are black or brown, in which they differ from those the of Turkmen, which are white. They are stretched on three or four pickets, only five or six feet high, which gives them a very flat appearance; at a distance one of these camps seems only like a number of black spots; but the piercing eye of the Bedouin is not to be deceived. Each tent inhabited by a family is divided by a curtain into two apartments, one of which is appropriated to the women. The empty space within the large circle serves to fold their cattle every evening. They never have any entrenchments; their only advanced guards and patrols are dogs; their horses remain faddled and ready to mount on the first alarm; but as there is neither order nor regularity, these camps, always easy to surprise, afford no defence in case of an attack; accidents, therefore, very frequently happen, and cattle are carried off every day: a species of marauding war in which the Arabs are very experienced.

The tribes which live in the vicinity of the Turks are still more accustomed to attacks and alarms; for these strangers, arrogating to themselves, in right of conquest, the property of the whole country, treat the Arabs as rebel vassals, or as turbulent and dangerous enemies. On this principle, they never cease to wage secret or open war against them. Sometimes they contest with them a territory which they had let them, and at others demand a tribute which they never agreed to pay. Should a family of shaiks be divided by interest or ambition, they alternately succour each party, and conclude by the destruction of both. Frequently, too, they poison or assassinate those chiefs whose courage or abilities they dread, though hey should even be their allies. The Arabs, on their side, regarding the Turks as usurpers and treacherous enemies, watch every opportunity to do them injury. Unfortunately, their vengeance falls oftener on the innocent than the guilty. The harmless peasant generally suffers for the offences of the soldier. On the slightest alarm, the Arabs cut their harvests, carry off their flocks, and intercept their communication and commerce. The peasants call them thieves, and with reason; but the Bedouins claim the right of war, and perhaps they also are not in the wrong. However this may be, these depredations occasion a misunderstanding between the Bedouins and the inhabitants of the cultivated country, which renders them mutual enemies.

By united effort, the theorist and the practical man may accomplish much, which neither could effect alone.

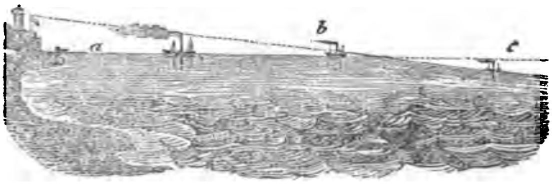
ASTRONOMY.

THE FIGURE OF THE EARTH.

In giving to our readers the following general view of astronomy, we are aware that but little towards a perfect elucidation of that sublime science can be done in so very small a space as is allowed us; yet are we persuaded that, after an attentive perusal of our remarks, the reader will be impressed with some tolerable knowledge of the grand features of this noble study, and his mind prepared for the reception of the more profound branches.

By the study of astronomy, we learn to believe that the earth on which we live is one of a countless host of similar worlds, with which the Almighty hand has bespotted the heavens of infinity that are vaulted over us. The perception of man is indeed limited, but in proportion as the power of opticks is developed, so is the greatness of the Creator, and the number of worlds he has made, nobly brought to view. With the naked eye we can see only about a thousand stars, nor in both hemispheres are there to be seen more than three thousand one hundred and twenty-eight. Of these, there are about twenty of the first magnitude, seventy-six of the second, two hundred and twenty-three of the third, five hundred and ten of the fourth, six hundred and ninety-five of the fifth, and sixteen hundred and four of the sixth. Hence it will be observed that, in point of number, they increase in proportion to their magnitude or distance, since the number of stars of the tenth magnitude seen in Sir John Herschel's telescope may be said, comparatively speaking, to be infinite. Of the milky-way, there passes over the field of his forty-feet reflector the immense number of 116,000 stars in a quarter of an hour. That we may give some idea of space, it may be well to observe, that in the "Philosophical Transactions," it is said that Dr. Bradley found the distance of the nearest of the fixed stars, (Sirius,) to be 7,600,000,000,000 miles. Now it is taken as data among high astronomical authorities, that a star of the second magnitude is twice as distant as one of the first, that one of a third magnitude is three times as far, and so on to the tenth magnitude, of which Sir John Herschel states, "the light, though travelling at the rate of twelve millions of miles in a minute, has been nearly two millions of years arriving to the earth." Hence then we are led to suppose that the world we inhabit can be but a mere atom in this grand scale of creation; and as it must appear to all that the first and most consistent study in astronomy must be the earth—our resting-place, we shall at once proceed to describe its properties, beginning with its shape or figure.

THE FIGURE OF THE EARTH IS GLOBULAR.

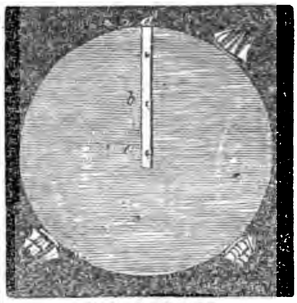


The above sketch represents a steam-vessel, going from the shore out to sea, with a figure standing on the beach watching it as it recedes. As the straight
line *a*, *b*, *c*, indicates the direction in whi
son looks, it will be seen therefore that
ceeds, her hull will appear to sink gra
the water, and as the distance increases
gradually lose more and more of her, til
ney will have entirely disappeared, a
shown at *c*. This will occur were the f
six feet four inches high, and the ship ter
the observer. It will be observed again
losing sight of the steamer at *c*, the spec
diately ascend the tower in the rear, he
bled to look over the rounded protubera
water, which before impeded his sight,
same vessel for ten miles farther.

From accurate data on this apparent
of a steamer at sea, and a little knowled
nometry, it would appear that the ship w
upon the arc of a circle, whose diameter
eight thousand miles; a fact which has
dantly proved by many of the bold nav
have sailed from England in a westerl
and after navigating three hundred and s
of longitude, have returned in an easterl
much to prove the sphericity of the glob
now refer to the attraction of gravitation

All substances are made up of minute
philosophers call *atoms*, and each poss
tractive power in proportion to the qua
ter, or number of atoms of which it i
Hence any large substance suspende
will attract or draw towards it all smal
or particles that may be floating near
will do equally on all its sides; and
rule, a large body floating on the wa
sensibly attract small ones to it. So t
ing the greatest degree of ponderosi
attracts, or powerfully draws to its su
wards its centre all bodies upon it, an
distance from its surface. This prop
the *attraction of gravitation.*

The degree of weight of a substanc
arises entirely from the earth's attrac



[Gravitation]

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the ball downward would be expedit
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passing the orifice of the well at *a*, b
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would begin to slacken; and when
at *b*, its descent would be but slow,
counter-attraction of the matter abo
much to decrease its sensible wei
when the ball, after being deprived
weight by the strong attractive pow
above it, has laboured to the centre
cannot possibly fall further or pass

the constant gravitating force of nearly four thousand miles of aqueous, and terraqueous matter pressing on all sides. Hence the tendency of all matter is to the common centre, and the terms *upward* and *downward* are explained by lines radiating from the centre of the earth: from the earth's surface to the centre is *downward*, while from the centre to the surface, is *upward*. It is by this law of attraction that ships, trees, houses, men, &c., stand firmly on any part of the terraqueous globe, as in the case of ourselves, and our antipodes, or those whose feet are to our feet; nor shall we, or will they, move from this line of attraction, but by an impetus having more force than the power which attracts the ship or man, &c. to the earth's surface. Instances of these opposing powers we often find in wind, as on the sails of a ship, or against a tree, and in the muscular action we often see exhibited in the frame of man..

THE PAWNEE SACRIFICE.

The following particulars in relation to an ancient custom, still existing to some extent in the Pawnee nation, and a sketch of transactions witnessed there may contain matter of interest to some of our readers:—

Information had been communicated to Mr. Dougherty, acting agent of Indian affairs at Council Bluffs, by Major Pilcher, that the Pawnee Loups were making preparation to sacrifice to the "Great Star" a Paducah woman, who had been captured by a war party about two months previous. Mr. Fontenelle, engaged in the Indian trade, had remonstrated with the chiefs against their barbarous purpose, without having changed it; and Mr. Papin, the resident trader, had made an effort to apprize the agent of their intentions. All that had been hitherto effected only amounted to delay of the execution for a few days, until the agent could signify his wishes; and in the meantime, the victim was kept in the medicine-lodge, in charge of the high-priest, to fatten for the sacrifice. It had been the intention of Mr. Dougherty, as soon as advised of the above facts, to send his protest against this cruelty, and solicit of the Pawnee chiefs the release of the captive; but to a proposition from Captain G. H. Kennerly, agent for the Sioux, that they should both visit the Pawnees in person and attempt a rescue, he assented. The commanding officer at the post having mounted a small escort, the agents, accompanied by several officers attached to the garrison, set forward. On the fifth day after their departure they reached the old Grand Pawnee village, where they were told that the captive would be executed the next day, and that many of the Grand Pawnees had gone up to the Loup village to witness it. Having despatched a runner to advise them of the approach of the party, they proceeded and reached the Loups that evening. On entering the town they were met by the principal chief, who provided for their accommodation the most spacious lodge in his village, which was found "swept and garnished." The party supped at an early hour with "mine host," and by special invitation five times afterward with as many *red gentlemen*, who gave them excellent fare. Their civilities did not end here. About one o'clock at night, the strangers were awakened by the wild minstrelsey of a serenading-party, who had quietly entered the lodge for this purpose. By the glimmering of the lodge fire the outlines of their persons were dimly delineated as they formed a circle near the door; and they retired after performing one or two pieces, composed, it is presumed, by old Thunder the drummer. The agent had been told that fuel and all the materials were prepared for the sacrifice; and when the chiefs and braves of the nation met him next day in council, faint hopes were entertained of success. No argument or persuasion, however, was omitted to obtain the release of the captive. At the opening of the council, Captain Kennerly informed the chiefs that they were now to consider Mr. Dougherty as their father, or agent, and desired them to listen to him. Mr. Dougherty's talk was long and animated. He reminded them of several promises which the Pawnees had made to the whites, to discontinue the practice of burning their captives; he recalled their attention to the solemn assurances given by the Knife chief and his son to Manuel Lisa, all now dead, that this horrid practice should never be resumed by their nation. This was an address to their superstitious fears, for the Pawnees believe that the spirits of departed chiefs and warriours hover over them, and observe their actions. It was likewise urged in council, in general terms, that by acceding to the propositions of the agent, the tribe would make the most effectual advances in the good opinion and friendship of the whites, whom it was believed they would not willingly offend. It was observed, soon after opening the council, that the principal men of the tribe were disposed to release the captive; and the first and second chiefs had, the evening before, signified their anxiety to effect this object. Those in opposition to this humane measure were such as had enjoyed least intercourse with the whites. The women and children were clamorous for the sacrifice; the former, that they might enjoy a savage mental repast—the latter were only anxious to see the show. In this they evince the same bad taste observable among their white brethren, on occasions of similar spectacles. As the authority of the chief depends on his personal popularity, the agent had reason to fear his red friends could not effect their object; particularly when it was recollected that red women have greater influence in state affairs, than we are disposed to allow those who have *fairer* pretensions.

There was a warriour conspicuous in council, as well on account of his standing in the nation, as his tawdry costume. His name was Bad Moccasin. This red gentleman wore a gold-laced scarlet coat, a necklace of white-bear talons; and he stood an *upright* man, in a green leggin and a crimson one, the advocate for mercy, the friend of Christians. He was not a bad representative of the cavaliers of the reign of Charles I. He had visited the metropolis of the union; and, in language as bold as it was eloquent, he urged the release of the captive. By his intercourse with white men, he said, he was convinced of the impropriety of the sacrifice. He had taken his great father at Washington by the hand, and pledged himself to oppose these barbarous rites. A young brave, likewise, told his countrymen that he knew it was the opinion of Pawnees that these sacrifices would ensure them prosperity at the hands of

the Master of life. But, said he, let us distrust our own opinion, for the whites have more intercourse, and are better acquainted with God Almighty than naked red men ; therefore, let us listen to them—let us please them, for we cannot please better men. The second chief, the son of Big Axe, made a long and very animated harangue against the sanguinary creed of his nation. His manner was so full of interest, that the structure of his "talk" has been lost. He continued to press the subject in debate until his voice failed him, and he sat down evidently chagrined that he could no longer give utterance to sentiments worthy a Christian. The only dissenting voice that was raised in council emanated from a dark-visaged warriour, who, in ironical phrase, said, that he presumed his nation, by their apparent consent to release the victim, had secured themselves perpetual health and unceasing prosperity, and then departed. This aroused the principal chief, Antoine, who had not yet spoken to his people. Indignant at the illiberal insinuation, he told them the dog lied. The whites, said he, have given us no such assurance. We must die ; they must die ; and the Master of life will permit neither white nor red men to live always. The veteran chief continued, at length, to urge his people to gratify their visiters by releasing to them the captive, and no further opposition was evinced. But, when nearly seven hours had been consumed in council, and when success appeared almost certain, a savage, whose bearing, and visage, and demoniack howl gave token of his vocation, entered the lodge. A circle of two hundred red warriours, reckless as they are, could no longer affect indifference. He assumed a seat beside the chief, with an air that seemed to claim homage from men and things inanimate. This being was one of those impostors who are known to afflict every uncivilized community on this part of the continent, in the various juggling arts of a "medicine-man." He partakes of the mixed character of a heathen doctor of divinity and modern conjurer. He bore, unblushingly, the impious appellation of GOD ALMIGHTY. The principal chief Antoine, near whom old Medicine had seated himself, drew his robe around him in closer folds, as if to shield his person from the knife of his dangerous associate ; and the chief appeared ill at ease until the mock prophet had given his sacred pipe a few pacifick flourishes and conciliatory puffs. After this mockery the divine conjurer arose, and made several strides toward to that part of the lodge where the rays of the sun were admitted, and drew from beneath his tarnished laced coat a pocket-glass, which he held up in the manner of an enthusiast, for dramatick effect. Through this medicine he affected to hold communion with the Deity. After resuming his seat, he proceeded to state in substance as follows : "I had believed the Master of Life would be very angry if we withheld the promised sacrifice ; but I find that I can so arrange the medicine, or, in other words, our spiritual and temporal relations with him, as to secure, without the burnt-offering, general prosperity—plenty of buffalo, and abundance of corn." After a few solemn flourishes and several supernatural attitudes, old Medicine departed. When no longer embarrassed by the ill-omened eyeballs of the prophet, the chiefs proceeded to collect the sentiments of the several clans or families, who had attended the
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Meantime, the medicine-men
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ceasingly at his side infernal lullabies or anthems of the damned. When the victim is brought out for execution, he is placed between two stakes resembling May-poles, surmounted with a black flag. The hands and feet are extended and made fast to these poles, and a small fire is kindled near the feet of the subject, in which irons are heated and applied to his breast and groins. This torture is continued until the sufferer is beginning to sink under it, when the spy or vidette of a war-party (previously organized for this ceremony) is seen approaching with the same light-footed caution that is observed in actual war. After enacting this mockery, he reports to the chief of the war party that he has discovered the enemy; that he is in an exposed position, and off his guard. Under these circumstances an immediate attack is determined on, and the valorous war-party rush forward to the place of sacrifice, and despatch the victim with a shower of arrows. After this, the fire is increased until the fat exudes freely from the roasting subject. At this stage of the ceremony, the women of the nation, who are corn-planters, press around the pile and oil their hoes, and, holding them up, implore abundant harvest. The arrows of the braves, having been ingloriously dipped, as already described, in the blood of the enemy, are fitted for the exigences of a great buffalo-hunt.

In the evening after the council, it was rumoured in the village that a young brave had determined to kill the captive, and that he was loitering at the door of the lodge with his bow and arrows for that purpose. The chiefs, however, still assured the agent that the affair was settled, and that she should depart with him next day unmolested; and the son of Big Axe, the second chief, had given all his horses, firearms, and every article of his personal property, except his bows and arrows, to satisfy the people of the nation. In this transaction he evinced his greatness of soul; and his firmness of purpose never appeared to desert him but once, and then only for a moment. When his scarlet lace coat was spread out, he cast an imploring look around him; but the pang of separation was momentary—and he drew himself up, and, as his buffalo robe fell down from his breast, he smote it with his clinched hand as he exclaimed, "Am I not a chief!" There may exist somewhere a white philanthropist who would have uttered more, had he given less. The captive still remained in custody of the chief to whom she had been surrendered by the big medicine-man, and was this night guarded in the lodge by the young brave who had captured her.

He sat at the entrance of the little recess where she slept, with a naked sabre in his hand, apparently indulging in as much self-respect as "a son of the moon, father of the stars, and chief of the brass-hilted sword." "Let him come," said he, supplying words suited to the action, as he drew the polished blade across the palm of his mahogany hand, "if he is tired of life, and he shall find that the brave who made a captive can protect her." The village was, during this night, as silent as the tenements of the dead. Not a song was raised, nor did a cheerful lounger drop in, to evince his interest in the strangers. But the chiefs, and a few files of red soldiers, (a kind of police-officers,) sat with war-clubs in rest around the lodge-fire, exchanging ideas below the breath, and at the finger-ends.

On the following morning, when the whites were ready to depart, five of the principal men of the tribe, the first chief excepted, presented themselves as in readiness to accompany the agent to the fort, and conduct the captive thither. The woman was led out, and while the travellers were mounting, she was put into a saddle, but not until a knife was drawn to coerce her, by the brave who was charged with this service. She was apprehensive that mischief was intended, and when in the saddle she refused to take the guidance of her horse. The same warriour who lifted her to her seat led the horse, as the party set forward. They had not cleared the lodges, when an Indian from the covered entrance of one of them sprang forward, and met the whites with a bow strung and arrows in hand. The brave, who led the horse, without an instant's hesitation, closed with him and wrested the arms from his grasp. In a moment, this mischievous fellow was succeeded by another from a like concealment, who, as he presented his diabolical visage to the clear light of day, let fly an arrow that passed through the robe and under dress of the captive, and penetrated so far into her side as to inflict a mortal wound. While she was slowly sinking from her horse, the brave who had led him applied his bow to the naked shoulders of the murderer, in a style that Solomon himself, the ancient advocate for the use of the rod, would have approved. Thus began that mêlée in which two political or religious parties, red men and a few whites, philanthropick aspirants, were likely to sustain an unequal conflict. It was known to all the gentlemen present who were acquainted with the Indian character, that if blood had been shed among themselves, they, under the momentary excitement, would have sought to inflict vengeance on the whites present. Thus, when the sedition arose, it was deemed a safe and just mode of winding up this unhappy affair by separating the conflicting parties. Accordingly, when a distinguished brave, whom they called the Big Sergeant, had tried the force of his war-club across the naked shoulders of that warriour who first attempted the murder of the captive, and was about to repeat his blow, Captain Kennerly interposed a ready and a strong arm, and prevented his friend Big Sergeant from laying a head full of *bumps* open to craniological inspection. Mr. Dougherty, who had lingered at the door of the lodge to allow some of his red people to take leave of their father, was summoned to the scene of action by the wailings of an old squaw, whose mock melody howl was recognised by him as the echo of mischief. He came in time to detach the murderer from a deadly conflict which he was entering upon with old Antoine, the head chief of the nation. Doctor Gale was likewise active in quelling the insurrection. Mr. Papin, the resident trader, was present, and he, as well as Mr. Dougherty, addressed the braves in their own language; and the latter repeated to the chiefs what he had told them in council, that he was satisfied with their conduct, and did not wish them to effect his views at the expense of a single drop of Pawnee blood. While the tranquillity of the village was thus partially settled, the slain captive had been borne off amid the cowardly buffetings of those who ill deserved the name of men, although qualified with the term uncivilized.

When nothing further remained for them to do in the village, the disappointed philanthropists rode slowly out of it. As they proceeded homeward, they saw the body of the murdered captive dragged forward to the head of a ravine that crossed their trace, and a little out of their route, where it was thrown down. To this point a column of about two hundred warriours, garnished with women and children, marched, that each might dip a war-club, or some other weapon, in the blood of the slain, or "strike" a fallen enemy, an achievement esteemed peculiarly valorous in a red man. It may be proper here to remark, that the captive was still in custody of the Pawnee chiefs when she was slain. Thus the whites were spared the mortification of witnessing her death when under their protection.

The party was about two miles from the village, when they were overtaken by the Big Sergeant. He was on foot, and only armed with a bow and arrows. He signified his intention to accompany the agent to the fort, and he was immediately mounted. He rode as gracefully, and in fewer rags than a Circassian prince would have unfurled, and he encountered the toils of the march with untiring fortitude, particularly at *trencher-hours*, insomuch as to locate a feast and a famine in the same camp. He returned to his nation laden with presents.

This visit to the Pawnee nation has resulted in the conviction that the moral condition of the Indians has been very little improved by the paternal care of the government of this republick, and by the pious exertions of societies instituted for the purpose. That they generally esteem the whites a superiour order of beings, appears in all our intercourse with them.

The principal chief of the Pawnee Loups was proud to wear the fatigue-jacket of a private soldier. Beau Red Coat, or Bad Moccasin, acquired additional distinction and influence by appearing in his scarlet and lace, the cast trappings of a musician; but the braves of the nation, who were best acquainted with white men, were disposed to abolish their ancient religious rites in deference to the opinions of their visiters. It is, however, to be lamented that red men advance so tardily toward civilization. An opinion is gaining ground among those who take the trouble to think on the subject, that to improve materially the condition of Indians, they must be first governed, then civilized, and afterward Christianized.

There is in the Indian character something to approve, much to condemn. No one can regard their intellectual endowments with indifference—many view them with deep interest.

ARCHITECTURAL MONUMENTS.

Greece, celebrated for the beauty of its climate, the fruitfulness of its soil, and, in ancient times, for the valour of its sons, their love of liberty, and their proficiency in philosophy, poetry, and eloquence, was divided into a number of petty states, inconsiderable as it respected the extent of their dominion, but of great importance in the page of history, both for the bravery of their soldiers, and the learning of their philosophers.

It is probable that Greece owes much of its never-dying fame to the manner in which the actions of
her heroes have been reco
heroick as those of *Miltiade*
number of other great patrio
try, may have been perforı
having been recorded by sucl
Xenophon, *Plutarch*, and oth
eloquence, have either failec
have fallen into total oblivion

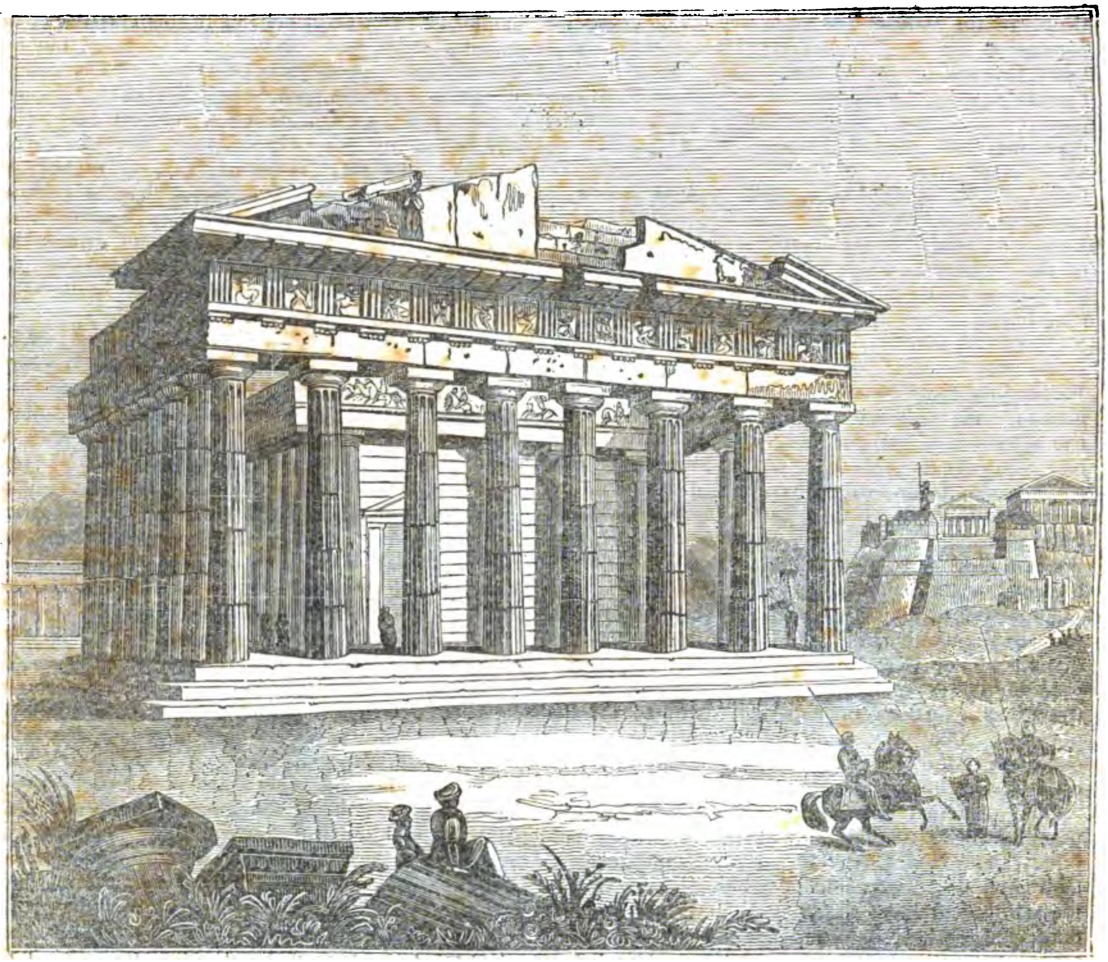
Sallust has well observe
actions of others is more di
those actions themselves;
hard to acquire a correct kn
the motives which induced
grandeur of the actions rec
by the nobleness of the styl
of them is handed down to
has this been done in such p

Among these states, Athe
eminence. It is true she w
renown by Lacedemon, and
bow before that haughty r
greatness, in the pursuit of li
cies of refinement, in the kn
tice of the fine arts—in sh
rude bravery, she as much e
as the splendour of the *merid*
beams of the *silver moon*.

It is much to be questioned
not owe the whole of her r
Corinth. From these two re
asperities of military pursuit
and polished by the gentle a
those rays of brightness and
tially illuminated the other st
ing Lacedemon out of the q
painting, architecture, poetr
held in any estimation, the
Greece were of secondary
left little or nothing by whicl
guished. Athens still exists,
ow of what she once was.
ly temples still give a grand, t
ancient splendour, and of th
she carried architecture and
friends and enemies seem to
extinction of every relick of

From the Parthenon, or te
by Pericles of white marble
style of architecture, many
tures that adorned the Acropo
walls of the British museum
has been almost demolished
on the city, during the late st
ried on by the Greeks agains
its having been wrested from
now erected into an independ
hoped that it may ere long s
that shall eclipse its former g
to have been built by Cecrops
out of Egypt, and settled
founder it was at first called
of eminence, "*Polis*," or "*T*
of Ericthonius, its name was
honour of the goddess Mine
troness of the city under the

Athens was originally bui
in the midst of a spacious
situation was chosen, partly



[The Temple of Minerva.]

against piratical attacks, or sudden invasion, partly to prevent its being suddenly inundated—a fate much dreaded in the early ages. In process of time, the number of inhabitants being too great for this small space, great part of the plain was covered with buildings, which were denominated the *Lower City*, as was the ancient part, the ACROPOLIS, or *Upper City*.

The ACROPOLIS was once rich in stately buildings; the principal were the *Parthenon*, already noticed—which had it no other enemies than time and the elements, would probably have been in perfect preservation to this day; but, alas! Athens fell under the power of the Turks; and that barbarous people are said to have burnt many of the most precious statues and elegant columns into lime—and the temple of Neptune and Minerva. In the former was the fountain said to have sprung up at the stroke of Neptune's trident; and in the latter, the olive which she produced, and the palladium which fell from heaven in the reign of Ericthonius.

The Lower city was likewise adorned with many magnificent buildings; among the principal of which were the "*Temple of Theseus*," built by Conon; the "*Temple of Olympian Jupiter*," and "*The Pantheon*," or "*Temple of the Gods*," a most noble structure, supported by one hundred and twenty marble pillars, and having over its great gate, two horses sculptured by Praxiteles. In this temple was the famous statue of Minerva, of ivory and gold, the work of Phidias.

The schools of philosophy and athletick exercises, called gymnasia, were numerous. Among the most celebrated were the *Lyceum*, where ARISTOTLE taught; and as he generally delivered his instructions to his disciples *walking*, they were called *Peripateticks*. The Academy, so called from one *Academus*, was the school where PLATO disseminated the principles of his philosophy. It was a garden adorned with stately walks and rows of trees; and so sacred was it considered, that it was forbidden even to laugh there, that all appearance of levity might be excluded.

Athens was rendered a convenient port by three harbours; namely, the Piræus, Munychia, and Phalerum. Of these, the first was the most spacious and was divided into three large basins, called Cantharos, Aphrodrium, and Zea. As this harbour was at the mouth of the Cephisus, three miles from the city, it was connected with it by two strong walls, defended by towers. The harbour was capacious enough to contain four hundred ships of the largest size used in that day.

The history of Athens affords a just specimen of the advantages and disadvantages of a democratick form of government. It gave rise to great statesmen and warriours, to moral philosophers and orators of unrivalled eloquence; for as all power emanated from the people, it was essentially necessary to cultivate sedulously those arts and that knowledge, by which their minds could be governed, and their passions influenced.

But, while this form of government drew forth the talents, and encouraged the ambition of men blessed with extraordinary endowments, it occasioned the politicks of the nation to be continually vacillating, and rendered the situation of the commanders and leading men precarious and dangerous. The man that was one day idolized as a god, was, perhaps, the next, thrown into prison, and condemned to die.

Long after Athens had ceased to be a free state, and had become a part of the Roman dominions, it continued to be the seat of learning and refinement. Its schools, founded by Socrates and Plato, still flourished, though with diminished vigour; and the Athenians, while they had lost their military renown, still retained that polish which rendered them the most refined nation in the world. Yet, with all this refinement, the generality of the people are said to have been impious, vicious, and cruel.

While, therefore, Athens maintained its reputation for learning and politeness, and was the most renowned place for education of the Roman youth, it is not to be wondered at, that, as they imbibed useful knowledge, they likewise acquired many vices, and habituated themselves to practices which, on their return to Rome, contributed to injure the morals of their fellow-citizens and to destroy that
republican simplicity which had contri
to the extension of her power. To
had this arisen in the time of the em
ian, that, by an edict, he suppressed t
cal meetings of the Academy.

To minds imbued with the learning
of Greece, a visit to Athens is partic
ing. At a distance it displays a magni
equal to that of its most flourishing st
ous condition of its ancient structures
discernible. The Acropolis rises to
the most impressive grandeur, and t
columns of the temple of Olympian
clearly to be seen between that cit
Ilissus.

GAZELLE-HUNTING.

The gazelle or antelope forms a con
cies between the goat and the deer k
what resembling the former internally, a
externally, excepting its horns, which a
or ringed round, with longitudinal dep
ning from the bottom to the point.*

Of all the animals in the world, th
said to have the most beautiful eye, ext
liant, and yet so meek that all the e
compare the eyes of their mistresses to
animal. The disciple mentioned in Act
who was raised to life at Joppa, was call
which by interpretation signifies Dorca
zelle, from the beauty of her eyes; and
a common comparison in the East, "*A*
sel," or, "You have the eyes of the gaz

---

* The gazelle agrees with the goat in the te
horns, (which have a core in them, and they neve
and with the deer in the elegance of their form an

[Hunting the Gazelle.]

greatest compliment that can be paid to a fine woman. The gazelle is most beautifully formed, and bounds with surprising agility; they are so fleet that grayhounds, though reckoned excellent, cannot come up to them without the aid of the falcon. The usual method of taking the gazelle is by hunting it with the falcon or the ounce, a species of leopard, which takes its prey, not by its fleetness, but by the greatness of its springs; but should he fail in his first essay the game escapes; but it is sometimes taken by the following expedient:—A tame gazelle, brought up for that purpose, is taught to join those of its kind whenever it perceives them. When the hunter, therefore, discovers a herd of these animals together, he fixes a noose round the horns of the tame one, in such a manner that if the rest butt it, they are entangled, and thus prepared he sends his gazelle among the rest.

The tame one no sooner approaches, but the males of the herd instantly sally forth to oppose him, and in butting with their horns are caught in the noose. Finding himself taken in the snare, terrour lends him additional strength and activity, and he makes the most vigorous exertions to disentangle himself, and escape before the hunter can come up with him. Its effort under these circumstances is proposed for imitation to the person who has rashly become surety for his neighbour.

"Deliver thyself as an antelope or gazelle from the hand of the hunter, and as a bird from the snare of the fowler"—(Proverbs vi. 5.)—that is, "Thou hast imprudently placed thyself in perilous circumstances; suffer no delay in making an effort for thy release."

LINES. BY MRS. FRANCES ANNE BUTLER.

I'LL tell thee why this weary world me seemeth
But as the visions light of one who dreameth,
Which pass like clouds, leaving no trace behind:
Why this strange Life, so full of sin and folly,
In me awakeneth no melancholy,
Nor easteth shade or sadness o'er my mind.
'Tis not, that with an undiscerning eye,
I see the pageant wild go dancing by,
Mistaking that which falsest is, for true;
'Tis not that pleasure hath entwined me,
'Tis not that sorrow hath enshrined me—
I bear no badge of roses, or of rue.
But in the inmost chambers of my soul
There is another world, a blessed home,
O'er which no living power holdeth control,
Anigh to which ill things do never come.
There shineth the glad sun-light of sweet thought,
With Hope and Faith holding communion high,
Over a fragrant land, with flow'rs wrought,
Where gush the living springs of poesy.
There speak the voices that I love to hear,
There smile the glances that I love to see;
There live the forms of those my soul holds dear,
For ever in that secret world with me.
They who have walk'd with me along life's way,
And sever'd been by Fortune's adverse tide;
Who ne'er again, thro' Time's uncertain day,
In weal or wo may wander by my side;
These all dwell here: nor these, whom life alone
Divideth from me, but the dead—the dead,
Those happy ones, who to their rest are gone,
Whose foot-prints from the earth have vanished.
Here dwell they all;—and here, within this world,
Like light within a summer sun-cloud furl'd,
My spirit dwells:—therefore, this evil life,
With all its gilded snares, and fair deceivings,
Its wealth, its want, its pleasures and its grievings,
Nor frights nor frets me, by its idle strife.
O thou who readest, for thy courtesy,
Whoe'er thou art, I wish the same to thee!

Knickerbocker.

USEFUL ARTS.

ROPE-MAKING.

THE art we are now about to describe is one of great antiquity, and is practised in almost every part of the world. With the earliest dawn of civilization we find men combining the larger grasses and the intestines of animals to form flexible bands for fishing, and other domestick purposes; but it is in the application of vegetable fibres to the manufacture of cable ropes that we must look for the perfection of the art.

Ropes are still made of every substance that is sufficiently fibrous, flexible, and tenacious. The Chinese and other orientals even make them of the ligneous parts of several plants, such as certain bamboos and reeds, the stems of the aloes, the fibrous covering of the cocoanut, the filaments of the cotton pod, and the leaves of some grasses. But the barks of plants are most productive of fibrous matter fit for this manufacture. Those of the linden tree, of the willow, the bramble, and the nettle, are frequently used: but hemp and flax are of all others the best; and of these the hemp is preferred and employed in all cordage exceeding the size of a line, and even in many of this denomination.

Hemp has two properties which make it peculiarly valuable. These are great strength and the length and fineness of the fibres. The best in Europe comes to us through Riga, to which port it is brought from very distant places southward. It is known by the name of *Riga rein* (that is, clean) hemp. Its fibre is not the longest (at least in the dressed state in which we get it) of all others, but it is the finest, most flexible, and strongest. The next to this is supposed to be the Petersburgh *braak* hemp. *Chucking* is a name given to a hemp that comes from various places, long in the fibre, but coarse and harsh, and its strength is inferiour to hemps which one would think weaker. Its texture is such that it does not admit splitting in the ordinary way. It is therefore kept in its coarse form, and used for inferiour cordage. It is, however, a good and strong hemp, but will not make fine work.

Hardly any art can be carried on without the assistance of the rope-maker. Cordage makes the very sinews and muscles of a ship; and every improvement which can be made in its preparation, either in respect to strength or pliability, must be of immense service to the mariner and to the commerce and the defence of our country.

The principal aim of the rope-maker is to unite the strength of a great number of fibres. This would be done in the completest manner by laying the fibres parallel to each other, and fastening the bundle at the two ends: but this would be of very limited use, because the fibres are short. They must therefore be combined together in such a manner that the strength of a fibre shall not be able to draw it out from among the rest of the bundle. This is done by twisting or twining them together, which causes them mutually to compress each other. When the fibres are so disposed in a long skein that their ends succeed each other along its length, without many of them meeting in one place, and this skein is twisted round and round, we may cause them to compress each other to any degree we please, and the friction on a fibre which we attempt to pull out may be more than its cohesion can overcome: it will therefore break. Consequently, if we pull at this twisted skein, we shall not separate it by drawing one parcel out from among the rest, but the whole fibres will break; and if the distribution of the fibres has been very equable, the skein will be nearly of the same strength in every part. If there is any part where many ends of fibres meet, the skein will break in that part.

We know very well that we can twist a skein of fibres so very hard that it will break with any attempt to twist it harder. In this state all the fibres are already strained to the utmost of their strength. Such a skein of fibres can have no strength. What we have said of this extreme case is true in a certain extent of every degree of twist that we give the fibres. Whatever force is actually exerted by a twisted fibre, in order that it may sufficiently compress the rest to hinder them from being drawn out, must be considered as a weight hanging on that fibre, and must be deduced from its absolute strength of cohesion, before we can estimate the strength of the skein. The strength of the skein is the remainder of the absolute strength of the fibres, after we have deducted the force employed in twisting them together.

From this view of the matter may be deduced a fundamental principle in rope-making, that all twisting, beyond what is necessary for preventing the fibres from being drawn out without breaking, diminishes the strength of the cordage, and should be avoided when in our power. It is of importance to keep this in mind.

It is necessary then to twist the fibres of hemp together, in order to make a rope; but we should make a very bad rope if we contented ourselves with twisting together a bunch of hemp sufficiently large to withstand the strains to which the rope is to be exposed. As soon as we let it go out of our hands, it would untwist itself, and be again a loose bundle of hemp. It is necessary therefore to contrive the twist in such a manner that the tendency to untwist in one part may act against the same tendency in another and balance it.

Without going deeply into a process which would excite but little interest in the general reader, it may be enough to state that fibres of hemp are twisted into yarns, that they may make a line of any length, and adhere among each other with a force equal to their own cohesion. The yarns are made into cords of permanent twist by *laying* them; and, that we may have a rope of any degree of strength, many yarns are united in one strand, for the same reason that many fibres were united in one yarn; and in the course of this process it is in our power to give the rope a solidity and hardness which would make it less penetrable by water, which would speedily destroy it. Some of these purposes are inconsistent with others: and the skill of a rope-maker lies in making the best compensation, so that the rope may, on the whole, be the best in point of strength, pliancy, and duration, that the quantity of hemp in it can produce. The following rule for judging of the weight such a rope will bear is not far from the truth. It supposes them rather too strong; but it is so easily remembered that it may be of use. Multiply the circumference in inches by itself, and take the fifth part of the product; it will express the tuns
which the rope will carry.
six inches circumference,
the fifth of which is seven

It is usual in the manuf
pecially in those for nauti
them with tar. This is of
twine or yarn, as being the
hemp can be uniformly p
made to wind off from one
through a vessel of liquid h
er reel; the superfluous tar
through a hole surrounded
sometimes tarred in skeins
capstan through a tar-kettle
two plates of metal held tog
with a weight. There is th
ticed—tarred cordage is w
white, and the difference in
From some very accurate e
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made cordage the white wa
than that which was tarred;
of three months, the differen
was almost one fourth; and
and a half, the difference
eighteen. From these, and
was ascertained—1. That w
ual service is one third more
is subjected to the operation
retains its strength much long
house. 3. That it resists th
the weather one fourth longer.
"Why is tar ever used by th
cause white cordage when ex
very wet and dry is weaker t
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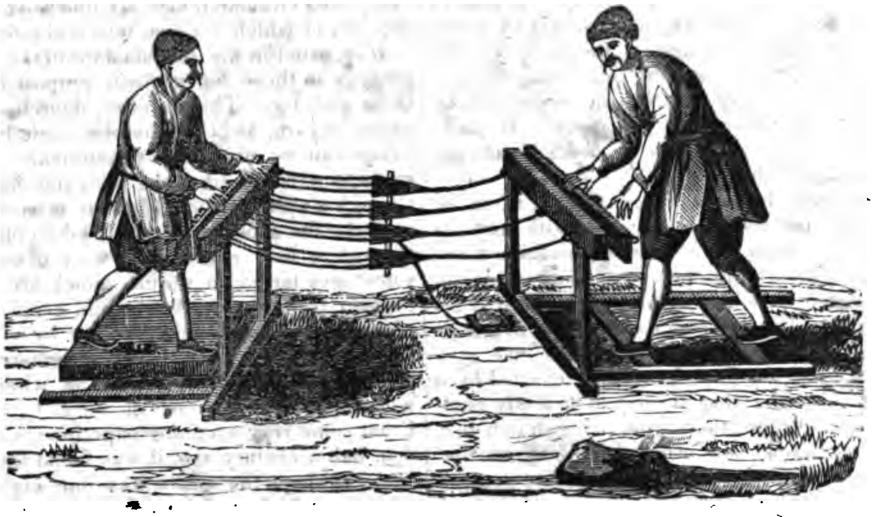
ually subjected. It has also
tained that cordage which is
red is constantly stronger tha
throughout.

Mr. Hancock has discovere
ing ropes with elastick gum (
quid state, for the purpose of
ble materials that compose the
effects of damp, by which they
into a state of decay.

The hempen materials are t
tion of *caoutchouck* procured fr
South America and some part
and is the same with Indian
from the tree it is about the
the appearance of cream. It
in the same way as tar is c
that it is not to be heated.

Several coats of this body
external surface of the cords
other, before the preceding coa
ly dry. After this the ropes
drying-room, moderately heat
material on the outside of th
perfectly free from stickiness.
that ropes for ships' cables t
prepared are equally pliable to
and as the material cannot cra
expose the internal fibres to th
damp, ropes so prepared will
by the ordinary treatment, bei
to external or internal injury.



[Chinese Rope-Making.]

In China they twist together long filaments of bamboo; and this material for ropes is preferred to hemp.

The above engraving is designed to represent the Chinese manner of making ropes. It bears considerable resemblance to our own method. Their cables and other large ropes, however, the Chinese spin vertically. The workmen are mounted on a high scaffold, and the rope descends, as fast as it is made, and is immersed in a liquor which renders it more strong and elastick.

CONCHOLOGY.

Under this title, or that of TESTACEOLOGY, naturalists have hitherto comprehended a systematick arrangement of shells, whether marine, fluviatile, or terrestrial: it is the science by means of which that branch of natural history is distributed into genera and species. The title conchology has, however, been somewhat misapplied, having been used in a less extended sense than its etymological meaning implies; since conchylion does not express a shell only, but the molluscous animals, whose body is altogether protracted—merely partially covered with a shell, or possessing portions of shelly matter, concealed under its skin, or in its folds, to defend certain organs most liable to external injury from their exposed situation. Such of our earlier naturalists as merely studied an arrangement of shells, detached from their parent architect, (as was, in fact, the case with nearly all of them,) have in many cases, and should in every one, have designated their systems by the term *Testaceology*, which is more appropriate, as not admitting any perversion of the meaning they attached to it, and clearly expressing its derivation and object—*Testa*, the Latin word for a shell; and *Logos*, a Greek word, meaning a discourse or treatise on the subject to which that word is added when descriptive of a science. The Greek writers on natural history also used the term *Ostracology*, which has the same meaning, and is considered by many authors far preferable, not being a compound of two languages, a fault but too frequently observable in the terminology of all works on natural history. Until within about the last half century, nearly every author on this branch of nature has written exclusively on the arrangement of shells, detached from the animals inhabiting and constructing them; this, with very little exception, continued down to the period when the immortal Linnæus, who may be styled the father of systems, among others, formed one of Conchology, but, like his predecessors, it was based entirely on the form of the shell, and his genera composed from the characters it presented. This was done with considerable judgment, and many of his descriptions are extremely accurate, so far as regards external configuration, but in theory, this system is wholly artificial, and consequently bad. It is true he seems to have felt it so to a certain extent, since he has made some reference to the analogous animal which he imagined to have belonged to the shell; these he placed among his *Zoophytes*, but he still took no other guide than the form of the shell, and made but few inquiries with respect to the supposed inhabitant The impulse given throughout Europe by his system, and that of several other eminent naturalists, led to an extended view of the subject; their attention became drawn to the anatomical investigation of the animals themselves; and the subject presented an interest never before experienced; accounts were published of the result of these inquiries, gradually producing a different method of viewing the classification of molluscous animals; and Pallas may be considered the head of this new school, as, in fact, it was from his *Miscellanea Zoologica* that the first germe of improvement was derived in the arrangement of shells, since grown into its present form, though as yet, in many respects, only in its infancy.

To persons who are collecting shells and forming cabinets of them only as beautiful objects of creation, the system of Linnæus may answer as well as any other, since they feel no interest in the scientifick arrangement of the species, or those wo-

derful progressions which mark the connecting links of genera, families, and species, with each other, changes frequently only to be accounted for by an adaptation of parts to necessity. Indeed, were it possible to preserve the animals who have formed the various species, they would present no attraction to the eye, nor add any value to the shells that contained them; but the impossibility of doing this renders the researches and reasoning of naturalists the more valuable. It may, indeed, to mere collectors of shells, appear wholly uninteresting, but a moment's reflection would convince them, that when we attempt to raise a part of the mysterious veil thrown over the works of nature, in order to acquire some knowledge of her laws, we then derive a new satisfaction in contemplating their operations; so that without being ourselves either anatomists, physiologists, or naturalists, in an extended sense of their meaning, we cannot fail of having our attention roused to examine many facts, extremely curious in themselves, which the *shell alone* exhibits, and the mind, once excited into action, seldom rests until it is satisfied. By pursuing a subject to its utmost limit, generally speaking too, the more difficult the task becomes, the more ambitious we are to surmount it. The mind may, indeed, for a time, flag and feel fatigued by over-exertion, but such are its elastick faculties, that they may be deemed indefinitely expansible; to say at what point knowledge will stop is utterly impossible, we must not, therefore, reject as useless, such portions of it as we cannot immediately understand, but relying on others more advanced than ourselves, endeavour, by every possible exertion, either to corroborate their asser-
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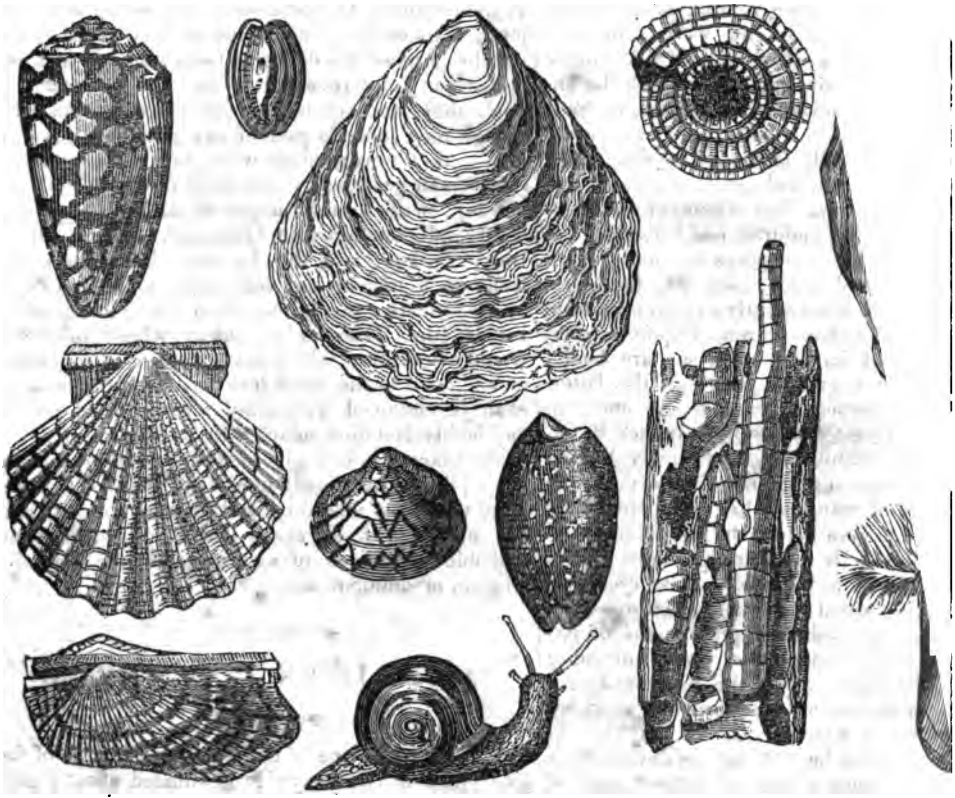


Conchology 1

neous conclusions entertained by book-naturalists and book-makers, among which are some (and those, too, professing to instruct the rising generation) who have recently published a poetical description of certain shells sailing together in little fleets—one valve expanded to catch the passing breeze that wafts them o'er the unruffled bosom of the vasty deep—of others that may be supposed to pass their leisure moments in playing at leap-frog with each other. But these, like all other tales conjured up by the magick wand of fancy, are more entertaining than true, and must be condemned in works whose object should be to clothe facts in the simplest garb, divesting them of the tinselled ornaments of fiction, which, though they may dazzle for a time, shortly sink before the light of truth, and are rejected as worthless. Another serious evil arises from these pretty nursery tales, that of casting a doubt upon every other assertion, however well founded in truth.

An instance may here be adduced of the ease with which some of the interesting operations of nature can be witnessed in the portion of creation now under our consideration, and amply repay us for the trouble. It is afforded by the humble, persecuted, but most beautiful of our native molluscs, the snail, (*Helix nemoralis,*) the little creature we barbarously crush beneath our feet, considering it a common enemy to horticulture. When we examine its wonderful formation, its tenacity of life, its reproductive powers, an instructive lesson may be furnished to the conchological student, most satisfactorily explaining the growth of the vast proportion of similarly constructed shells in other genera, and enabling him to understand by actual observation, and the evidence of his own reason, some of nature's steps in this branch of her works; he may easily watch the various changes that take place from the slight viscous covering with which the animal's body, in the first instance, is coated, or, as it were, merely glazed, till that substance becomes a consistent firm shell, finally fashioned into a painted palace adapted to the form and use of its inhabitant. It needs no logick to prove, that wherever creatures are endowed with a long endurance of life and great reproductive powers, great purposes are assigned to them. The contemned snail does not, therefore, merit the ill treatment it constantly experiences from man; and if we for a moment reflect upon its good services, and overlook its bad ones, we are bound to confess the former greatly outweigh the latter. It is viewed as a destructive marauder in our trim gardens; but we forget that we have invited its inroads by placing, within a comparatively limited space, a choice selection of dainty food even to the pampered appetite of man, but altogether irresistible to a snail. In the open fields, or the widely expanded forest, this little creature performs useful purposes in conformity to the ends of its creation; one of the most important of which is that of assisting in consuming the exuberant productions of nature, which, without its operations, would encumber the surface of the globe, check the progress of future vegetation, and interrupt that perpetual harmony of system, which has wisely ordained that the extinction of life shall not be felt, but its devastations become supplied by succeeding generations, each of their kind, whether vegetable or animal. In countries where vegetation is too luxuriant to be trained by art to the use of mankind, covering immense tracts of land with impenetrable gloom, not only snails, but other species of terrestrial molluscs, achatina, bulinas, &c., are found, some of a very large size, proportioned to the magnitude of the duties they have to perform, and in these situations their voracity is said to be most extraordinary—stripping the loftiest trees of their verdure in an incredibly short space of time. Shall we then grudge it a slender portion of our superfluous luxury, without ascertaining, by actual examination and rational reflection, that this little creature was not merely ordained to devour our choicest fruit, but that it has also a duty to perform by consuming, in a far greater proportion, other things in the vegetable world that would, without them, prevent the full completion of the very object for which we ignorantly destroy a principal agent. The well-established fact, that the eggs of these animals have been absolutely baked, during six months, under the scorching rays of a tropical sun, without destroying the germ of life, proves, could no other facts be adduced, that nature has vested in these creatures certain important uses and powers far beyond our short-sighted views; and it must lead a philosophical mind to conclude, that in this instance, as well as in many others equally remarkable, we stubbornly close our eyes to the good that is forced upon us. We think we hear it said, that in advocating the cause of snails, we have never had the mortification of seeing our ripe and delicately painted peaches disfigured by their hungry propensities. Be that as it may, we have also observed, that they, like ourselves, when no such treat presented itself, were content with humbler fare, and as industriously as voraciously consumed other objects, to us useless, or noxious as food, never deserting the purpose of their existence, though that end is not yet fully revealed to us. As an article of food, they are entitled to our consideration; for, though they form no part of *our* gastronomick delicacies, they nevertheless were considered such by the Roman gourmand; and even down to the present day, snails form an important article of nourishment and commerce in Germany, France, Spain, Italy, Turkey, and the Levant. This digression leads to a conclusion, constantly to be drawn by every reflective mind, that from the colossus of bivalves (the *Tridacna gigantea*) whose inhabitant would satiate the "sharp-set appetites of a hundred men," down to the shell less than a grain of sand, each is endowed with similar mechanical powers and bodily faculties, adapted to its sphere of action in the place it is destined to occupy, the one and the other playing an equally important part in this crumbling theatre of mortality, and forming so many connecting links of the chain that binds together the invisible operations of nature under the directing wisdom of omnipotence.

AMERICAN COMMERCE.

HAMBURGH.

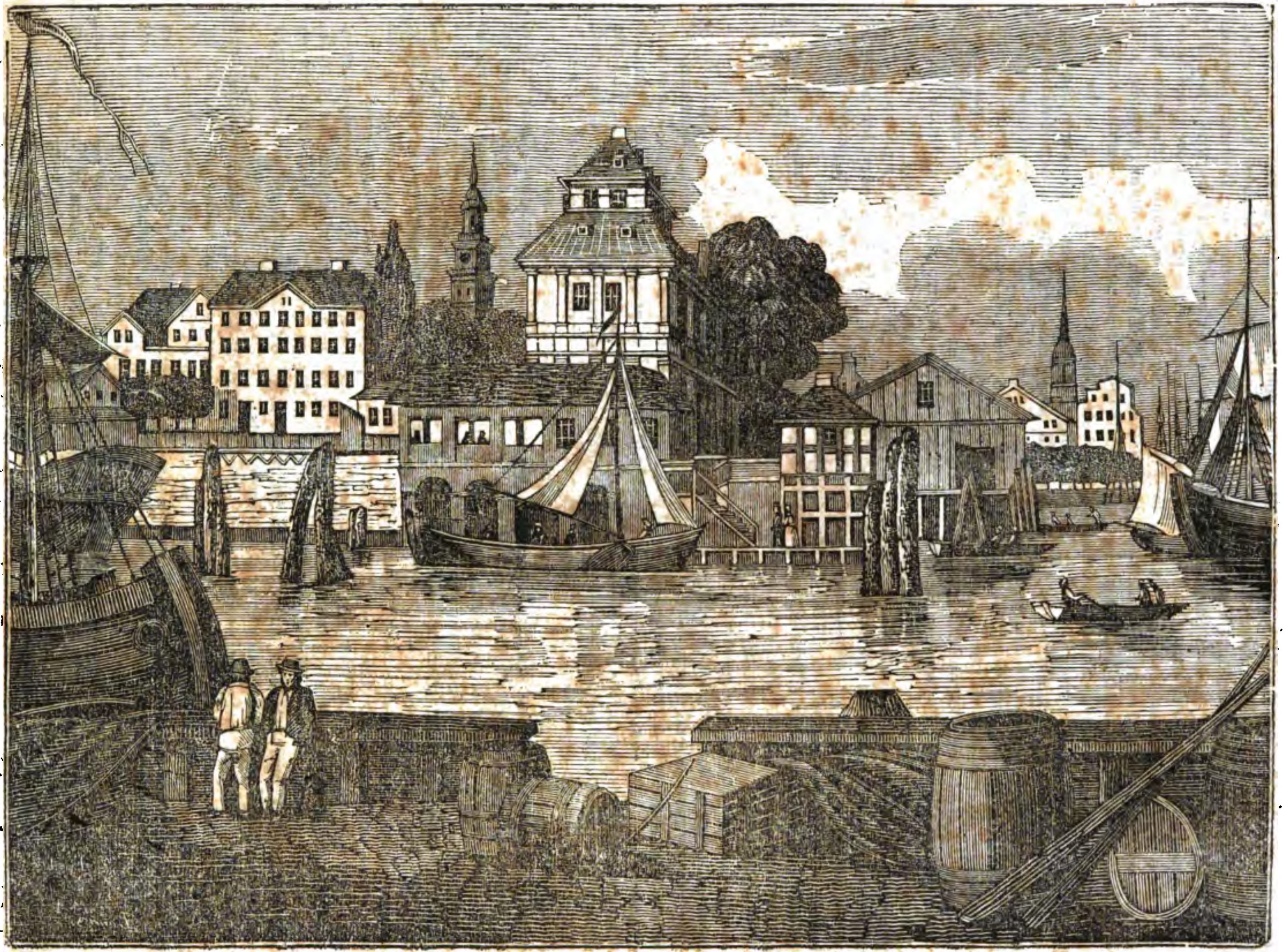
Hamburgh is one of the most considerable of the free cities of Germany; it is situated about eighty miles from the mouth of the Elbe, upon the northern bank of the river, which is navigable for large vessels as far as this port. The circuit of the city is about twenty-two thousand feet. In the northern part is a lake, formed by the small river Alster, which runs through the city into the Elbe, and turns several mills. An arm of the Elbe enters the city from the east, and is there divided into a number of canals, which take various directions, till they unite, and join the Alster in the southern part of the city, where they form a deep harbour for ships, which communicates with the main branch of the river; and there is a large space enclosed by strong piles, where ships may lie in safety; which is called Rummelhaven.

Canals intersect the lower part of the city in all directions, and almost all the warehouses are built upon their banks. In this part of the city, and also in that which lies on the east of the Alster, the streets are, for the most part, narrow and crooked. Many, however, of those in the western or New Town, are broader and straighter. The church of St. Michael, with its tower, four hundred and fifty-six feet in height, built by Sonnin, and intended for astronomical observations and for experiments in natural philosophy, was finished in 1786. This building, and some of the private houses, are remarkable for their architecture. The exteriours of the exchange and the council-house are also handsomely ornamented. Among the most remarkable buildings are the bank, the admiralty buildings, the orphan asylum, the new general hospital, the theatres, the exchange, the city and commercial libraries, Röding's museum, &c. The gymnasium and the Johanneum are excellent institutions for education. The building for the school of navigation, opened in 1826, is provided with an observatory, and a botanick garden is also annexed to it.

In institutions for the relief of the destitute, for the sick, and for the education of poor children, Hamburgh is inferiour to no city in Germany. Most of these are under the direction of private individuals, and they are principally supported by voluntary contributions. The constitution of Hamburgh is aristocratick. The government consists of four burgomasters and twenty-four councillors. To the senate are attached four syndics and four secretaries. Calvinists are excluded from the government of Hamburgh, as Lutherans are from that of Bremen. The ordinary publick business, both internal and external, is transacted by the senate alone; matters of more importance are regulated in connexion with the citizens possessed of a certain property. These are divided into five parishes, each of which sends thirty-six members to the assembly or general college. From these are chosen the members of the council of sixty, and again from these fifteen elders. Each of these colleges has peculiar privileges. The senate and the elders alone receive salaries. Justice is administered by several courts. But the court of appeal of the free cities of the Germanick confederacy is the superiour tribunal. The publick revenues were formerly considerable, without the taxes being oppressive; but the heavy debts incurred by the city, of late years, have greatly increased the taxes. The citizens are provided with arms, and accustomed to military exercises, so as to form a body of infantry, cavalry, and artillery, in regular uniform, amounting to about ten thousand men. The removal of the old fortification was commenced in 1 and the great French works have also been s demolished.

The established religion in this city is the theran, but complete toleration prevails. The ners of the inhabitans resemble those of the mercantile cities of Germany or Holland; pul worship is regularly attended, industry is gene diffused, and good morals prevail. Foreigners long been freely admitted to reside in the town; the troubles of the French revolution brought individuals of different nations and characters, a whom were allowed to remain as long as the lick tranquillity was not disturbed: hence the ous and sometimes contradictory accounts of morality of the place. The favourite taste of inhabitants, in point of amusement, is musick; previous to 1807, the era of commercial misfort to Hamburgh, the higher class of merchants li not only with hospitality, but with a certain deg of luxury. Hamburgh has long been distinguis as a commercial city of the first importance. transactions consist partly in agency, but more the purchase and sale of goods on account of merchants. They buy the commodities of Ameri Great Britain, France, Spain, Portugal, Holla Belgium, the West Indies, &c., and supply w these all the countries lying along the Elbe, difl ent districts on the Rhine and Lower Maine, anc part of the Prussian and Austrian dominions. Th also buy up the products of these countries, which linen and thread are the chief. These a cles are brought in great quantities from Bohem Moravia, Lower Saxony, and Westphalia, and t inhabitants of these retired quarters have discover that to make sales through the medium of Hambur is less hazardous than direct intercourse with t countries where their commodities finally arri The trade in timber is also of great importance, pecially during a maritime war, Hamburgh being t chief medium between the Baltick and the south Europe. The other articles of trade are very vario comprising flax, hemp, potash, tar, tobacco, wa honey, hides, wool, woollen yarn, smoked and s meat, mineral products, iron wares, in short all t products of the northeast of Germany, and a gre part of those of the centre and south. This trac like that in foreign goods, is carried on, partly commission, partly for account of the Hambur merchants.

The territory of Hamburgh, which contains o hundred and sixteen square miles, is bounded that of Holstein on the north and west; the city Altona, in the territory of Holstein, is not two mil distant from the gates of Hamburgh. Toward t east the Hamburgh territory borders on Lauenbur and on the south it is separated by the Elbe fro the territories of Hanover. Some of the islands the Elbe belong also, either wholly or in part, Hamburgh, together with the village of Moorbu on the left bank. Besides this, it has a jurisdicti over the bailiwick of Ritzebüttel, which contains t important town of Cuxhaven, at the mouth of t Elbe. Hamburgh, in common with Lubeck, al has jurisdiction over the bailiwick of Bergedorf, wi the small town of the same name, over the Vierland and a few places in Lauenburgh. The city ow its foundation to the emperor Charlemagne, who,



[View of Hamburgh.]

the beginning of the ninth century, built a citadel and a church on the heights between the Elbe and the eastern bank of the Alster, as a bulwark against the neighbouring pagans. The adaptation of the place for commerce and fishing attracted many settlers. Although its barbarous neighbours frequently destroyed this settlement; it was as often re-established, and the city was enlarged by new buildings. It became important as a commercial city in the twelfth century, and in the thirteenth it was one of the founders of the Hanseatic league. Even after the decline of the confederacy it maintained its freedom and flourishing commerce. The Hanseatic league with Lubeck and Bremen subsisted till 1810, and has been renewed since 1813 and 1814.

Until the fifteenth century the city was confined to the strip of land between the Elbe and the eastern bank of the Alster. The western bank was gradually built upon, principally by exiles from the Netherlands. Thus arose the new town, which was so important, even in the early part of the thirty years' war, that it was enclosed within the fortifications, and thus gave to the city its present extent. In 1618 Hamburgh was formally acknowledged a free city of the empire, although the archbishops of Bremen continued to maintain possession of the cathedral, which was ceded away at the peace of Westphalia, and was afterward ceded, with the duchy of Bremen, to Hanover. The thirty years' war, amidst the devastations of which Hamburgh was spared, increased the number of its inhabitants, as late wars in Europe have also done, during which many persons emigrated there from the Rhine, from the Netherlands, and from France. Its commerce increased in the same proportion, and compensated, in a great degree, for the diminution of its manufactures, occasioned by the awakened spirit of industry, and by the non-importation acts of foreign powers. Its sugar-refineries, manufactories of whale-oil, ship-yards, and establishments for printing cotton, are still important. The commerce of Hamburgh was increased, particularly by its direct intercourse with the United States of America, and by the war in the Netherlands and on the Rhine, by which it obtained a considerable share of the commerce of those countries. Thus, at the beginning of the present century, Hamburgh was one of the richest and most prosperous of the free cities. Its reverses began, in 1803, with the entrance of the French into Hanover. They took possession of Ritzebüttel, and closed the Elbe to the English, who, in turn, closely blockaded the mouth of the river. Hamburgh afterward passed into the occupancy of a large French garrison, and Bonaparte seized on a part of the publick funds. In 1810 it was incorporated with the French empire, and declared the capital of the department of the Mouths of the Elbe. The decrees prohibitory of commerce continued with occasional suspension, but with immense loss to this city, from 1808 until the spring of 1813, when the hope of support from the advancing troops of the allies led to a memorable, but premature, effort against the French. Hamburgh was shortly after re-occupied by the latter, a contribution of nearly two millions sterling imposed on it, and the most positive orders given to defend it, at whatever sacrifice, against the allies. This led to incalculable distress, to the destruction of the houses on the ramparts, to the seizure of merchandi and finally of the bank funds, by Davoust. At l the city was evacuated in May, 1814, and part the bank funds were restored by the Bourbon g ernment.

The city of Hamburgh, has a population of o hundred and thirty thousand persons, and the lan over which it has a separate jurisdiction conta about thirty-five thousand more.

POPULAR MEDICAL OBSERVATIONS.

PHYSICIAN AND PATIENT.

The fate of a physician is a hard one. To say nothing of the length of time spent in his medica studies, all of which are laborious—some decidedly repulsive, and of the necessary expenditure of money for attending lectures and hospitals, purchasing books and instruments, and in many cases, for foreign travel, he must expect, after he is fairly a candidate for professional employment, to be made, in this capacity, an occasional butt for the stale jokes of people in health, and their ready servitor at all hours when they are sick. The latter think no trouble too great—no service too menial for him to perform for them. He cannot, indeed, complain that the communication made to him by his patients, of their various infirmities, though it be a confidence often grudgingly given, and extorted by pain, should still be regarded by him as a secret and sacred deposit. But he is expected, moreover, to be proof against every trial of his temper made by the impatient and querulous sick, and to compensate, by his assiduity and skill, for neglect of themselves, by their delay in sending for him at an earlier period. He must supply, by intuition, all the blanks left in the details of their feelings, and the exposures which originated the disease, whether the omission were from forgetfulness or design. As he himself is not supposed to have much sensibility, no pains are taken to spare him on that score. Every suggestion, however absurd and ill-timed, which false affection or neighbourly impertinence can make, is freely obtruded on him. He is driven to a declaration of the result of the case under treatment, and often compelled to sacrifice either his reputation for sincerity, or for skilful prognosis. If he frankly predict an unfavourable and fatal issue, he is supposed to be wanting in the resources of the art; or, if he foretel recovery, he is supposed not to be fully aware of all the dangerous symptoms, and in either case, hints are thrown out that an additional adviser would be desirable. Should he, with a full knowledge of the acuteness and violence of the disease, adopt a clear and decided plan of treatment, he is accused by gossiping visitors—spies from the camp of scandal, of acting rashly, and in a spirit of theory. Were he, on the other hand, knowing that the disease will terminate favourably, without the necessity of much interference on his part, to give little medicine, and resolve to wait—a calm but not unobservant spectator, it is delicately whispered that he is at a loss what to do, and that he is ignorant of the remedies adapted to the case. The loss of his sleep and the interruption at his meals, often caused by frivolous messages, alarms without cause, need merely be mentioned—they are things which, as a matter of course, a physician is expected to submit to with a good grace, and to seem even as if a favour had been conferred on him, by preventing him from gratifying his hunger, and renovating his weary frame and anxious mind.

And what, after all, is the equivalent for these services rendered, annoyances encountered, body worn down, and temper chafed? At times, and not unfrequently, nothing—no money—cold thanks—sometimes misrepresentation and abuse. On occasions, indeed, he receives the language, and has evidently elicited the feeling, of deep gratitude. But for the recurrence of such, even though the intervals be long, he could not sustain himself under the pressure of so many annoyances. The meanest, most abject, and avaricious member of the profession, could not remain in it without some such reward—mere money could not pay him. The richest man in the land, however prodigal in the payment of fees, is still the debtor to his physician, who has saved his life, or rescued him from deformity and lingering disease. What shall be said then to those who swindle the physician out of his hard earnings, by refusing to pay him, while all other claims are attended to? who think him paid by the honour of having been their ready servant, their slave during a protracted and dangerous disease, or who chafer about their bill, as if they were trading with an old clothes man?

There are medical ethicks which point out the duties of the physician to his patients and to those applying to him for relief, and also the rules which are to govern him in his intercourse with his professional brethren. We wish those ethicks were widely circulated among all classes and callings—that the duties of patients to their physicians might be more clearly understood, and distinctly admitted. Indeed, it would not be amiss if there were to be promulgated a code of valitudinary ethicks, in order to show the nature of the obligations incurred on the side of the sick.

Among the first duties, as regards their own preservation is, to send early for a physician—the duration of the disease will thereby be made shorter, its violence more easily subdued, much pain and suffering prevented, and the fees so much dreaded, for long attendance, saved. A physician sent for on the first hour of a disease making its attack, will be more likely to bring it to a favourable termination in three days, than he would in a fortnight, if three days were allowed to elapse before his services were required.

When the disease is thought to require medical assistance, it is better for the interest of the patient, that the message be conveyed to the physician early in the morning, before he commences his business round—so that he can make the desired visit almost immediately, in place of allowing hours to elapse, which must often necessarily be the case, if the message is left after he goes out. In the country, it is still more important that the physician should have early notice; otherwise he may be ignorant of the call on him during a whole day, in which he is visiting distant patients, near some one of whom, perhaps, is the very individual who is now all anxiety to see him, but who was tardy in announcing his wishes.

When the physician begins his inquiries into the causes of the disease, and the habits of the patient, and the feelings of the latter at the time, the replies ought to be full and frank—no equivocation—no falsehood. If delicacy, real or false, prevent a female patient from replying to all questions, her aged relative or nurse ought to be very explicit in her stead. Whatever has been attempted in the way of cure, ought to be distinctly mentioned. In fine, every information ought to be communicated by the patient and friends, which can throw any light upon the existing malady. There ought to be no reserve, trick, or falsehood, respecting an avowal of the attendance of another physician, should such have been previously called in. It sometimes happens, that there is a coolness, if not rupture, between two physicians, owing to what is thought by one of them, ungentlemanly conduct on the part of the other; whereas, in fact, the whole misunderstanding originated in the false or garbled notice made by the patient or the friend, near his bed side. Doctors are said to be quarrelsome; and where is the wonder, when sick people often think themselves excused in a course of concealment and of prevarication, which makes it impossible for the physicians called in a different times, and without the knowledge of each other, to know the real state of the case, or of the language held to each of them respectively, by the patient and his relatives, or meddling friends.

The same disingenuousness is shown by invalids to their physicians, in the case of the former taking quack medicines. When first questioned on the subject of their having used any medicines at all, they occasionally answer decidedly in the negative. The physician is, consequently, at a loss to explain the coming on of certain symptoms and disturbances—such as salivation, mercurial fever, or sore mouth, deranged functions of the stomach and bowels, and peculiar eruptions of the skin. Had the truth been told; it would have showed that the patient had been salivated by some panacea, catholicon, or some one of the many syrups vended by quacks, all equally unworthy of trust, in as far as their nostrums are concerned.

A YANKTOANA HORSE-FIGHT.

[Extract from a letter addressed to the editor of the New York Evening Star.]

My last letter was closed yesterday in some haste for the purpose of witnessing an Indian amusement, just without the town, on the bank of the Keetooshsahawna creek. I have frequently seen bull baits in Mexico, and among the *refined* amusements of my youth have enjoyed the extacies of a cock-pit, and many a battle royal between two contending mastiffs, to say nothing of an occasional set-to myself; but a regular *horse-fight* among the Yanktoana Indians on the sources of the Missouri river, beats them all hollow.

I feel incapable of picturing in your mind, in a letter a scene so gladiatorial as that which has just taken place in this city between two Indian stud-ponies; because you cannot, without being an eye-witness, imagine the various modes and the skill by which their attacks and repulses were directed.

This scene possessed a more than ordinary interest to us, who were anxious to read the Indian character from the fancy pictures drawn in modern novels. Here we had the soul and substance of the animal indulging in the native cruelty of his nature. Some five or six hundred Indians, of all ages and both sexes, surrounded two ponies of more than ordinary size, in an artificial basin, formed at the base of two ancient mounds, about sixty feet high. The spectators were variously *attired* and *unattired!* in the most fantastick manner imaginable, with faces and sha[illegible] heads painted in the deepest colours, gaudy plumes waving from their crowns, bright trinkets hanging from noses and ears, their arms and legs loaded with shining clasps, and small looking-glass ornaments suspended from their necks. About forty chiefs were mounted, provided with large clubs, who performed the duties of whippers in, and to keep the antagonists from desertion. A loud and tremulous yell! a whoop from the whole tribe who were present, gave the signal for the onset. The mounted chiefs commenced beating the combatants most unmercifully, and forcing them with their clubs and horses upon each other, when they soon began a simultaneous attack by biting and kicking, and this was done with such consummate skill, in parrying each other's blows, that we were compelled to believe they actually entered into the sport, and understood the science of the game they were playing. All this was amidst the deafening yells of applause and approbation of the spectators, who were grouped in the most picturesque manner. Their attacks were by kicking sideways, and biting at the same time, then turning, and after eyeing each other like two cocks, would rear and plunge their fore feet into the opponents, like two battering rams coming together until one seized the other by the neck, and in a twinkling laid him prostrate, and held him down for near half a minute. This part was a perfect wrestling scene. They often showed symptoms of exhaustion, at which the Indians beat them on to the fight the harder; nor was the battle ended until after about one hour's constant struggle, when one of them was entirely done over and yielded unresistingly to the victor. They were a complete gore of blood, their skin being lacerated and laid open in places all over their bodies, being covered with bruises which had swollen into large bunches, and nearly all the teeth were knocked out of their heads. The next day I examined them, and neither of them could stand upon his legs. They had been trained for two years for this exhibition of savage cruelty. The festivities of the day closed with a war-dance and a fancy ballette among the squaws!

FARMERS' DEPARTMENT.

MAKING PORK.

The business of fattening pork for sale, is practised to some extent by most of our farmers, and when performed economically, or when the most is made of the materials given them, it is undoubtedly a source of handsome profit. Yet all will admit, that when carried on in the manner it sometimes is, the process of pork-making drains, instead of replenishing, the farmer's pocket.

To make fattening hogs profitable, it is ne
first of all, that the breed selected for feedin
be a good one. There is a vast difference i
in respect to easy fattening, proper propo
bone, weight, &c., and the farmer who th
make money by feeding the long-snouted,
backed, slabsided animals, which disgrace
name of swine, will find in the end that he h
oned without his host, and has thrown aw
time and money.

There are several good breeds of pigs no
country, mostly introduced by crossings
kinds with the Chinese, and of course havin
ent degrees of aptitude to fatten; and these
have been so disseminated over the country,
farmer who is willing to make the effort m
some improved animals in his pens. The ti
gone by when a hog should be kept four y
weigh four hundred; the business of fattenin
little understood where hogs of a year and a
not reach that amount, and some pigs have e
ceeded that weight.

Next to selecting good breeds, it is requi
they should be kept constantly growing.
must be some foundation for fattening, when
cess commences, or much time will be lost
pairing errors, and much food consumed in
carcass that should be employed in covering
fat. Hogs should be kept in clover pasture
being allowed to them for their exclusive
large in proportion to their numbers that t
may always be fresh, yet not so much so a
up to seed, or grow coarse or rank. They
have the slops of the kitchen, the whey or bu
of the dairy, unless this is required for your
and, in general, every thing they will eat to
tage, or which will promote their growth.

The manner in which the material inten
fattening pork is prepared and fed has a dec
fluence on the rapidity of the process, and o
quence on the aggregate profits. If given o
much of the value of the article is lost; grain
improved by grinding, but the full effect of al
of feed is only brought out by cooking.
without doubt, the very best article ever p
for making pork; and though other good sub
may occasionally be used with advantage, a
produce pork of fair and good quality, yet exp
has proved that the real cornfed meat is on th
superiour to all others. Hogs will fatten on c
en to them in any state, yet it is far preferabl
soaked, ground, steamed, or boiled. A farme
acquaintance, and who is celebrated for the
of his hogs and the excellence of his pork, i
habit of mixing oats with his corn before g
in the proportion of about one-fourth, and thi
if he had not the oats of his own, he shou
gainer in exchanging corn, bushel for bus
oats, rather than not have them to mix with h
feed. He thinks that they eat the mixtur
than the clear corn meal, are much less liabl
feit, and of course will fat much faster with
than without them. Peas have generally be
ed next to corn as an article for making goo
and they are probably the best substitute that
been found, hogs feeding well on them, f
rapidly, and the pork being of good quality
almost indispensable that peas should be gr

soaked previous to feeding. Potatoes are probably the best of the whole for this purpose. Unless they are boiled, however, they are of little value comparatively, but when soaked, they will give the hogs a fine start in feeding, and they may then be easily finished off with corn or peas.

The fattening of hogs on apples may be considered as one of the successful innovations of the age, it being certain that this fruit possesses a value for that purpose which but a few years since was wholly unknown. The success of this experiment has given a new value to orchards, and will probably check their destruction, which in some sections of the country had already commenced to a considerable extent. The various reports from gentlemen of intelligence, of the practical results of apple-feeding, are most gratifying, and we have no doubt the system will be fully approved wherever fairly tested. Where convenient, let the hogs lie in the orchard from the time the fruit begins to fall, till it is time to gather apples for winter or cider, and they will in most cases be found respectable pork. When it is necessary to put them in the pen, boiled apples mixed with a small quantity of corn, oats, peas, or buckwheat meal, will fill them up rapidly, make them lard well, and fill the farmer's barrels with sound, sweet pork of the first quality. If any, however, are doubtful, they can easily finish off their apple fed pork, as is generally done with potato fed, with corn or peas, and with similar results. Genesee Farmer.

MAKING CLOVER HAY—IN COCKS.

Nothing is so hard to combat as the prejudice of farmers who think that they can learn nothing in their business. We have often recommended curing clover hay in cocks, as a means of doubling the value of this kind of hay, besides lessening the expense of curing it. Many good farmers and intelligent men have ridiculed the process, because it ran counter to their practice, and was what they could not reconcile to their idea of good management. But they would never make the trial; if they had done so they would have seen that they were wrong and we right. We beg leave here to say, that in many districts of Great Britain, spreading hay from the swath, or tedding it, is going wholly out of practice, as causing unnecessary labour, and as diminishing the value of hay. But there they are not blessed with an ordinary sunshine and heat in the hay season. The hay curing process with them is a business of some days, on account of their comparatively cool climate and humid atmosphere. But with us, when grass is matured, and thin, and the weather good, it is often the business of a day. But this cannot be the case with us with early mown hay, particularly where clover abounds. The grass is then in full juices, and the succulent stocks of the clover require time, as well as sunshine, to part with their moisture. Spread and exposed to a hot sun, the leaves, blossoms, and exteriour of the stems soon dry, but, in drying, the exteriours of the stems become indurated, and refuse, like wood painted when green, to part with the interiour moisture. The consequence is, the grass must either be housed in this half cured condition, and spoil in the mow, or if the curing process is completed, so as to prevent damage, the leaves and blossoms, which constitute the best parts of the hay, are over-dried, crumbled, and are lost. Cured in cocks, every part of the grass, whether the leaves of the thick stalk, dries alike, and is alike preserved, and the evaporation of moisture goes on, I believe, even in wet weather; for a partial, though in no wise a prejudicial fermentation takes place, and the rarefied air which degenerates, being specifically lighter than the atmosphere, is constantly passing off.

We have been induced to these remarks, in consequence of finding in the Farmer and Gardener, an agricultural paper published at Baltimore, a communication from John Smith, fully confirming the utility of our recommendation and long practice. It would seem that Mr. Smith was led to make the experiment rather from necessity than choice. But we will let him tell his own story.

"It will perhaps be recollected," he says, "by all attentive agricultural readers of that paper, (the American Farmer,) that it was recommended to farmers to put their hay, in its green state, or as soon as cut, into small cocks and cure it by sweating

"When I commenced cutting my clover hay, the prospect for favourable weather was flattering, but in a short time it changed, and it became evident we should have a wet spell. I then dropped my scythes and put all my hands to putting up the grass (then perfectly green, but exempt from external wet) into packs of the size of two hundred pounds of cured hay; building them compact and high, to avoid the introduction of rain as much as possible. Rain came on before I secured all the cut grass, but the next day was fair, and I succeeded, by unremitting attention, in getting the water dried out of the remainder and put it up in the same way. It continued rainy for ten days, and afforded no opportunity to cure in the sun, the cocks were examined daily, by running the hand and arm into them, and, contrary to all expectation, gave no indication of fermentation. At the end of ten days the weather became fair, the cocks were opened and found to be in a perfectly sound condition, except so far as the rain had penetrated, and the external wetting alone, in my opinion, made it necessary to open it at all. Tell farmers they need not fear of losing their hay on account of unfavourable weather at harvest. I have never seen worse weather in hay harvest, and I saved mine entirely well. It was most excellent hay."

Our practice has been, except in cases of necessity, like the one above, to let our hay wilt in swath, that is to cock in the afternoon that which is cut in the forenoon, and to have the cocks not to exceed fifty to seventy pounds of hay when cured. We are glad to see that a large quantity will cure well. Let it be remembered that the cocks must not be made by rolling, but by placing with a fork one layer above another till the cock is completed. Cultivator.

GRUB OR CUT WORM.

The farming interests of this country, have long and ineffectually sought for some mode to arrest the depredation of this worm, so destructive to the prospects of our agriculturists in the staple article of Indian corn.

The writer of this, is fully confident from analogy, that the following, if carefully adopted, will perfectly secure the corn against the influence of any insect or worm, accustomed to injure it, viz:—

Take one gallon of common fat or slush, and one quart of spirits of turpentine, let them be put together in a tight barrel, (having one head out,) and being well stirred, add half a bushel of unslacked lime. In this condition, the lime should be carefully slacked, and intimately mixed with the other ingredients, and water gradually added until the barrel is full.

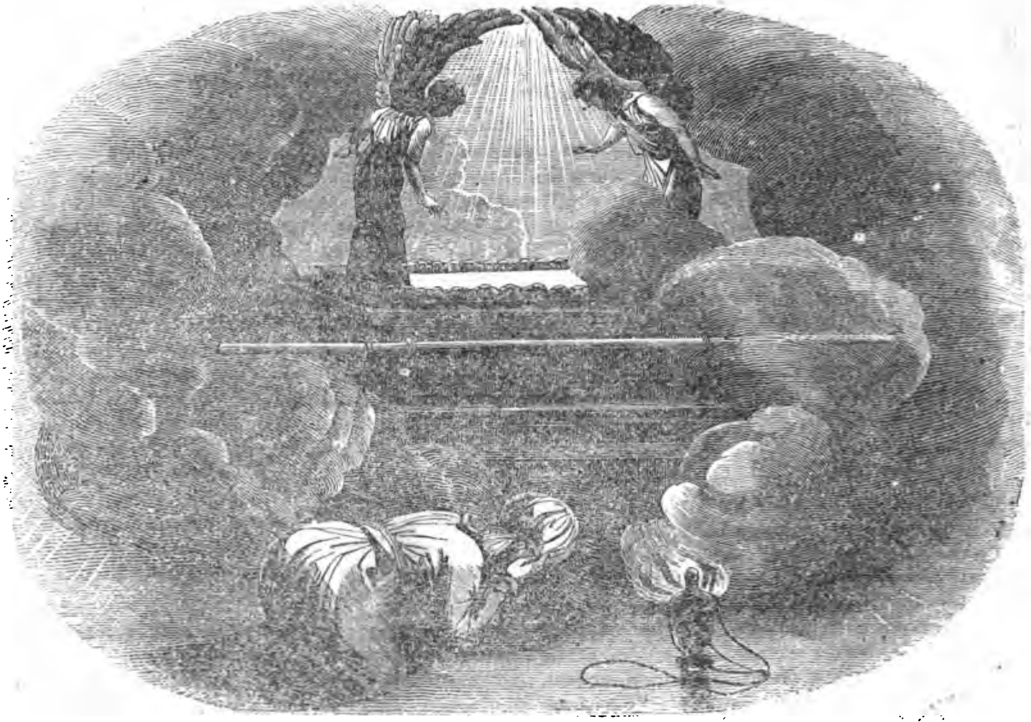
As soon as the corn makes its appearance above the ground let a portion of the mixtures be applied by means of a common watering pot, to the amount of about a teacup full to each hill of corn, and there is scarcely a doubt but that the worms will vacate the identical spot from the abhorence that all kinds of worms and insects have to even the very smell of turpentine.

NORWAY.—Mr. Everest says of Norway:—"I have *often felt* that I could live and die contented among its rocks, and woods, and dales, in the midst of its quiet and virtuous people. No one ever left Norway without regret. It is a country, in many parts of which a child might walk about with a bag of gold, and no one would molest him; where the stranger, by day or by night, may knock at any door he comes to, and be welcome." But he describes them as "destitute of every comfort. With one large bed, like a deal box, into which they *all* creep some straw is spread at the bottom, and sheep-skins serve for covering. Their wainscots are composed of trees, with moss stuffed in the chinks; and in some houses, the *whole stock* of utensils were, one large pot, an axe, one knife, and half a dozen wooden bowls and spoons. Still they were very happy. We usually found two or three religious books in every house."

ILLUSTRATIONS OF SCRIPTURE.

IN the twenty-fifth chapter of Exodus,
the description of the *ark of the Covenant*,
ed to be made by the Israelites.

"And they shall make an ark of shittin
two cubits and a half shall be the length
and a cubit and a half the breadth thereof, a
bit and a half the height thereof. And th
overlay it with pure gold, within and witho
thou overlay it, and shalt make upon it a cr
gold round about. And thou shalt cast four
gold for it, and put them in the four corners t
and two rings shall be in the one side of it, a
rings in the other side of it. And thou shal
staves of shittim-wood, and overlay them wit
And thou shalt put the staves into the rings
sides of the ark, that the ark may be borne wit
The staves shall be in the rings of the ark
shall not be taken from it. And thou shalt p
the ark the testimony which I shall give thee.
thou shalt make a mercy seat of pure gold: t
bits and a half shall be the length thereof, and
bit and a half the breadth thereof. And thou
make two cherubims of gold, of beaten work
thou make them, in the two ends of the mercy
And make one cherub on the one end, and the
cherub on the other end: even of the merc
shall ye make the cherubims on the two ends
of. And the cherubims shall stretch forth
wings on high, covering the mercy-seat with
wings, and their faces shall look one to another
ward the mercy seat shall the faces of the cher
be. And thou shalt put the mercy seat above
the ark; and in the ark thou shalt put the testi
that I shall give thee.



[Ark of the Covenant.]

USEFUL KNOWLEDGE.

To Make Loaf Rice Bread.—Boil a pint of rice soft, and add a pint of leven, then three quarters of the flour, put it to rise in a tin or earthen vessel, until it has risen sufficiently, divide it into three parts, then bake it as other bread, and you will have three large loaves

Rice Cake.—Mix ten ounces of ground rice, three ounces of flour, eight ounces of powdered sugar; then sift those articles into eight yolks and six whites of eggs, and the grated peel of a lemon. Mix the whole well together in a tin stew-pan over a very slow fire with a whisk, then put it immediately into the oven in the same pan, and bake forty minutes.

Plain Rice Pudding.—Wash and pick some rice; throw among it some allspice finely powdered, but not much; tie the rice in a cloth, and leave plenty room for it to swell. Boil it in a quantity of water for an hour or two; when done, eat it with butter and sugar, or milk. Put in a lemon peel if you choose.

To Preserve the Brightness of Polished Steel.—Grind an ounce of native plumbago, (such as is used for making lead pencils,) very fine, in a gill of spirits of turpentine; then add an ounce of clean beeswax; apply a gentle heat, till the wax is melted, and continue stirring it till it is nearly cold. Brush over the steel with this composition, and when the spirits have evaporated, rub the work hard with a piece of glove leather, and wipe off nearly all the wax, that the metal may retain its brightness. This may be applied to iron or steel in machinery, or other work, and will be found to answer a much better purpose than oil, as it is less liable to collect dust from the atmosphere, and is, in general, much more durable.

To Print Gold Letters on Morocco.—First wet the morocco with the whites of eggs; when this is dry, rub the work over with a little olive oil, and lay on gold leaves. Then take some common printing types, and heat them to the temperature of boiling water, and impress the letters on the gold;—rub the whole with a piece of flannel, and the superfluous gold will come off, leaving the letters handsomely gilt. Another method is, to strew powdered rosin over the morocco previous to laying on the leaf; the heat of the types melts the rosin, which occasions the gold to adhere in the impressions, while the other may be brushed off.

To Wash Iron or Steel with Copper.—Dissolve sulphate of copper in water, in the proportion of one to three; wash the iron or steel with it, and it will instantly be covered with reduced copper. This is best performed by applying the solution with a brush, which must be followed directly with a sponge of clear water. In this manner any letters or figures may be drawn with a camel-hair pencil or pen, and if on steel, the letters or flowers will assume the brilliancy of the steel, and appear like highly polished copper. It may sometimes be requisite to cleanse the metal by washing it with diluted muriatick acid, that the copper may adhere the more readily. If the steel thus ornamented be held over a charcoal fire, the copper figures become blue first and, when the steel becomes blue, the copper takes a gold colour; but is restored again to its original colour by diluted muriatick acid.

To Give Iron the Whiteness of Silver.—To nitrick acid, diluted with an equal quantity of water, add as much mercury as the acid will dissolve; then add to the solution three or four times as much water, and having given the iron a coat of copper, as directed in the last experiment, brush it over in the same manner with the diluted nitrate of mercury; its appearance will be equal, if not superiour, to that of real silver. In this manner any common or rough iron work may be apparently silvered at a most insignificant expense.

To Wash Iron with Tin.—Small pieces of iron may be tinned, after being filed bright, by washing them with a saturated solution of muriate of ammonia in water, and dipping them, while moist, in a vessel of melted tin. If the iron is of such form as cannot be conveniently filed, it may be immersed in nitrick acid, diluted with as much water as acid; when the acid begins to act sensibly on every part, it may be washed with water, and then with the muriate of ammonia, and if a little fine rosin be sprinkled on it previous to dipping it in the tin, it may be an advantage. The iron must remain in the tin till it becomes nearly as hot as the tin, otherwise it will be coated too thick. Muriatick acid may sometimes be used, instead of muriate of ammonia, and if the iron is not filed, it will answer a better purpose. The inside of cast iron vessels may be tinned as follows:—Cleanse the iron by scouring or rubbing it with a sharp grained stone, keeping the iron wet with diluted nitrick acid. As the most prominent parts of the iron will be first brightened by the stone, the acid will also commence its action on the same parts, which will very much facilitate the work, while the hollows, and deeper parts of the surface, will remain untouched till the iron is nearly smooth. When this is accomplished, wash the iron with water, and then with clear muriatick acid; turn the vessel over to drain off the superfluous acid; then set it upright, and fill it with melted tin, which must be poured in cautiously, directly on the bottom of the vessel first, and the stream of tin increased till the vessel is full; then pour out the tin suddenly, and invert the vessel till it is cold. Sheets of iron are tinned, in the manufactories of tin plate, by immersing the sheets, endwise, in a pot of melted tin, the top of which is covered with about two inches depth of tallow. This tallow answers a better purpose, after it has become brown by use, than it does at first. The only preparation of the iron sheets is to scour them perfectly clean and bright.

To Restore Old Writing that is nearly Defaced.—Boil one ounce of powdered nutgalls, for an hour or more in a pint of white wine; filter the liquor, and when cold, wet the paper with it, or pass it on the lines with a camel-hair pencil, and the writing will be much revived.

MISCELLANY.

The Harmattan.—The harmattan is a periodical wind, which blows from the interiour parts of Africa toward the Atlantick ocean. It prevails, in December, January, and February, over a line of two thousand miles of coast, and comes from the north-east. It is accompanied by a fog, which leaves a dry whiteness, and affords neither dew nor moisture. It destroys all vegetation, and renders every thing so dry, that the natives then set fire to the high grass, to clear the country; and the destruction spreads with frightful rapidity.

The covers of books, and even of trunks, are shrivelled up; household furniture is much damaged, and the panels of doors and wainscots are split; the joints of floors open, and ships become leaky; casks, too, let out their contents, and require constant attention to their hoops.

The eyes, nostrils, lips, and mouth, are rendered dry and uneasy, and the very scarf-skin peels off. Salt-of-tartar, which is usually damp from absorbing its moisture from the atmosphere, remains dry by day and night, and when previously liquified, becomes dry in two or three hours. The evaporation of all moisture is excessive, indeed nearly four times that in other countries.

It is, however, salubrious to the human constitution. It recovers invalids in many disorders, and stops the progress of epidemics. It is supposed to proceed from some mountains called Caphas, and to be loaded with the arid pulverized dust of the great desert of Sahara. The south-west wind in the Mediterranean, called the Sirocco, is also believed to have the same origin.

The Fantees, or black natives of Africa, divide the year into the names of the prevailing winds, which they call by the names of the stars.

The Sturgeon.—The sturgeon, with a form as terrible, and a body as large, as the shark, is yet harmless. Incapable and unwilling to injure others, it flies from the smallest fishes. It is a harmless fish, and no way voracious. It never attempts to seize any of the finny tribe, but lives by rooting at the bottom of the sea, where it makes insects and sea-plants its whole subsistence. This great fish must therefore be a very slender feeder. Hence has arisen the German proverb, which is applied to a man extremely temperate, when they say, "He is as moderate as a sturgeon." The sturgeon ought to be as numerous as it is powerful; for Leuwenhoek professes to have reckoned one hundred and fifty thousand millions of eggs in a single roe. This seems extravagance: yet Catesby declares that the female frequently contains a bushel of spawn. Either estimate is surprising.

Nourishment of Plants.—In respect to nourishment, plants differ from animals. In the latter, fullness of feeding advances productivity; but, in plants, where they receive abundant nourishment, their flowers and fruit are long in appearing; but, when the nourishment is feeble, and the vegetable languishes, its reproductive powers act with rapidity. The less nourishment it receives, the more ready it is to reproduce.

Stones.—No stone or mineral has lif substances enlarge, but do not grow. The ment is always by exteriour accretion—t cessive addition of particles from without never by development from within, nor cular elaboration; nor by a functional varying in each species, and producing products.

Flowers.—Some flowers follow the p sun. The ripe ears of corn in a whole be found during the daylight to incline to though they return to a different position Sir J. Smith observes, "It is an invariab stance, that plants always turn their stem to the light, not toward the air. If in a the door of which is left open, we shall find them inclining to that side where th let the air come in whence it may."

Fish.—If fish and the other occupie ocean are sensitive to pain and fear, th susceptive of pleasurable feelings. They appearance of a placid and contented stat ence. No bird or quadruped seems happi have fewer wants; none require less mear to be comfortable: they need only food they can subsist without this when abs necessary. They suffer nothing from i of weather, or variations of the seasons from heat, cold, frost, rain, or bitter winc seem to be generally exempted from disea are always in one even temperature; the longer continuity of health and strength t other animals; and from these causes possess a natural longevity, which in som classes surpasses that of man

The Growth of Fish. The growth of fi gradual in some. A carp is, in the first size of a willow-leaf; in the next, four i the three following years, they grow on each; and after five, they increase in the years according to the nature of their pon seafish, fishermen allege that they must be old, before they are of a fit size for the mackerel, in the first year, is of the size o which it doubles in the second; in the years it enlarges, but is without melt or roe five and six, it is of the length we eat. T and barbel are in the first year like a crow in the second, will cover the palm of the h between five and six, are fit to be dressed.

Living without Food.—The striped hyen it will tear up bodies from burying-grounds long without food.

The sloth, *bradypdus*, can live a prodig without food; Kircher says, forty days.

The bear fasts from the middle of Nov the end of winter.

In the bird order, Wilson states of th breasted hawk, "One lived with me sever but refused to eat. Though he lived so lo out food, he was found, on dissection, to b ingly fat." Those animals which live on roots, herbs, or insects, can have this foo the season while these things are existing

LITERARY NOTICES.

Elements of Natural Philosophy: Embracing the General Principles of Mechanicks, Hydrostaticks, Hydraulicks, Pneumaticks, Acousticks, Opticks, Electricity, Galvanism, Magnetism, and Astronomy. Illustrated by several hundred Engravings. Designed for the Use of Schools and Academies. By LEONARD D. GALE, M. D., Professor of Geology, and Mineralogy, in the University of the City of New York, and Lecturer on Chemistry, and Natural Philosophy. New York: Collins, Keese & Co.

We introduce the full title of this school-book to our readers, and recommend it to their particular attention. We remember the delight we experienced, when we took up, for the first time, the "Grammar of Useful Knowledge," by Blair, and the avidity with which we studied its contents. This work is on a similar plan with that of Blair, though much improved, and brought down to the present state of science. To the student who is thirsting after the the elements of general science, this new volume of Dr. Gale's, will afford a fund of useful knowledge, abounding with simple, and interesting experiments, and illustrated by a great variety of new, and beautiful engravings; by-the-bye, this with us, is a particular recommendation—the book is furnished with *good* engravings—a matter that has been too much overlooked by the publishers of other works of a similar kind. In schools and families, this book will be found extremely valuable, and cannot be too confidently recommended to the notice of those who are engaged in the interesting though arduous duty of instruction.

Three Experiments in Drinking. Boston: Otis, Boaders, & Co. Another book of experiments! and a good one too—in our judgment the best. This is a "*hit palpable,*" at the "*three cent individuals*"—and exhibits intemperance in all its different stages. Reader, if you know one fond of drink, put this book in his hands; if the subject be not reformed, he is a candidate for the madhouse.

The Knickerbocker sustains its well-merited reputation, either in *hard* or easy times. The good taste of the Editors and the abilities of their contributors, combine to form the most interesting Literary Magazine with which we are acquainted, and the only one, indeed, in which there is sufficient variety to suit all classes of readers.

The beautifully written "Letters from Palmyra," the papers on "American Society," and "Illustrations of American Society," and the contributions of the ever eloquent Dewey can not fail to delight any reader; while the out-pourings of Ollapod and Penny-a-Liner have a wonderful knack of bestirring one's sides in the anti-dispepsy style.

An examination of Phrenology, in two lectures; delivered to the Students of the Columbian college, D. C. Feb, 1837. By Thomas Sewall, M. D., Professor of Anatomy and Physiology. Published by request. Washington city, 1837.

This volume, by a gentleman of distinguished attainments in his profession, and whose reputation is deservedly great, commends itself to the notice and respect of both advocates and opponents of Phrenology. The Dr. is ranked among the latter, and attempts to prove the fallacy of the science: his remarks are comprised under five heads, and in pursuing his investigation, Prof. Sewall inquires:—

"I. How far Phrenology is sustained by the structure and organization of the brain.

II. How far facts justify the opinion that there is an established relation between the volume of brain and the powers of the mind.

III. How far it is possible to ascertain the volume of the brain in the living subject, by measurement or observation.

IV. How far it is possible to ascertain the relative degree of development of the different parts of the brain, by the examination of the living head.

V. Notice a few facts which have been used in support of phrenology, and conclude with some general remarks."

The volume is embellished with several graphick prints.

The Harpers have recently issued the twelfth and thirteenth volumes of Paulding's works. They contain the popular tale of "The Dutchman's Fireside," which was issued with distinguished success, and which although presented to the publick many years since, still retains its popularity, and is a favourite with every body.

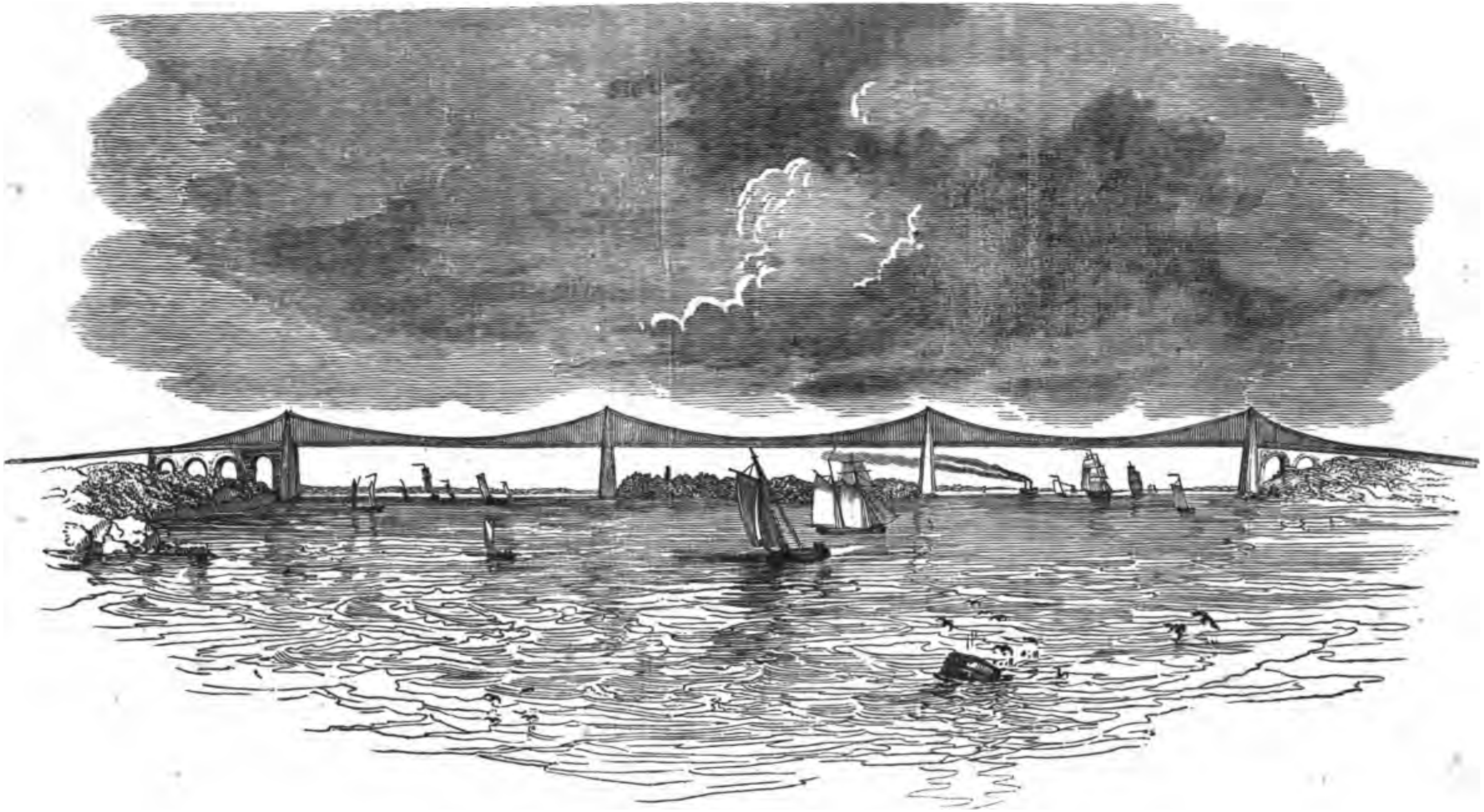
We have received from the same publishers, several new works which have recently been issued in the Classical Library. The histories of Herodotus, as rendered by Belve, are embraced in the twenty-ninth, thirtieth, and thirty-first numbers. The poems of Homer, as translated by Pope in the thirty-second, thirty-third and thirty-fourth volumes, while the admirable satires of Juvenal as translated by Badham, and those of Persius as given by Drummond, are both embraced in the thirty-fifth volume.

We are indebted for our brief notice of the pretty village of Homer, a view of which is given on the fifth page of the presen number, to the polite attention of S. S. Bradford, Esq. of that place.

The proprietors of the Philadelphia Saturday Courier, eve anxious to gratify their numerous subscribers, propose to publish "the lions of Philadelphia," a series of views of the publick buildings in the city of brotherly love. The editors remark in regard to them:—

"The architectural beauty of many of the *publick buildings* of this city is proverbial. They have not only been the pride of the city, but excite the attention of all strangers. Believing it would be highly acceptable to our numerous patrons, scattered as they are from the lakes to the ocean—to be presented with *splendid illustrations,* from the hands of first rate artists—we have made arrangements to bring out a complete series. They will embrace a correct and well-executed view of all the *publick edifices,* of our city and its vicinity, forming in the end a collection, that may well be termed *the lions of Philadelphia,* and which will be presented to our patrons, without trenching upon the usual variety of our columns. Where it may be expedient, we will accompany the engravings with such descriptions as may be of interest.

The Lydias. D. Appleton & Co., of New York have published another volume of the series of the "*Ladies' Closet Library,*" by Rev. Robert Philip. This series already includes the Marys, the Marthas, and the Lydias. They are very handsome little volumes, and the author is deservedly popular in the religious world. We are are gratified to learn that these volumes meet with an extensive sale.



PLAN FOR A SUSPENSION-BRIDGE ACROSS EAST RIVER, AT BLACKWELL'S ISLAND, N. Y.

SUSPENSION-BRIDGE.

It has been thought by many that one of the greatest obstacles to the rapid and permanent growth of the city of New York, existed in the fact that there is at present no certain and rapid mode of communication with the adjoining country.. To be sure the different ferries by which the inhabitants of this splendid city are able in the spring and summer months to enjoy the society of their neighbours, might at first view, seem to render that objection futile; but when we consider the great expense of ferriage, and the uncertainty of the length of passage in the winter season, when the rivers are frequently obstructed with ice, it will be apparent to every one that if bridges could be thrown over the North and East rivers, they would certainly be a publick benefit, and contribute very much to the prosperity and comfort of the people.

We are therefore not a little gratified at being able to present our readers in the present number of the Family Magazine, with a beautiful plan of a suspension-bridge, designed by Mr. Graves, and to be built of iron. We hope in the course of a few years, to have the pleasure of walking over this bridge, which if erected in accordance with the plan offered to the publick, will be highly honourable to the country, and to all concerned.

"Mr. Graves' plan for an iron hanging-bridge over the east and west channels of the East river, from between sixty-fifth and seventy-fifth streets on the city of New York side, across the northern part of Blackwell's island to a feasible point on Long island opposite.

The distance from point to point on a feasible line of construction may be stated as follows:—From New York to Blackwell's island, eight hundred and fifteen feet; across Blackwell's island, six hundred and ten feet; and from Blackwell's island to Long island, six hundred and eighty-three feet; making a total distance of two thousand one hundred and eight feet. The bridge to have three openings of seven hundred feet each between the points of suspension, with abutments of arched masonry on either side of the channels, and spanning Blackwell's island with three connecting arches. Height of road-bed above high water, one hundred and twenty feet; to spring of side arches, ninety feet; from road-bed to summit of the suspending piers, fifty-eight feet; span of smaller arches, one hundred and fifty feet; centre arch, two hundred and fifty feet, with corresponding spring; each of main piers to be sixty feet wide at high water level, sloping upward in proportion. The breadth of the bridge forty-five feet, with (at each opening) ten ribs of twenty pieces each, connected by a cross grated plate, and cross braces, the whole further secured by two horizontal diagonal cables, connected at the centre point of crossing and at the piers; The roadway passes through arched openings in the suspension-piers, to have two carriage-tracks with a foot-path intervening; suspended from four catenarian lines of malleable iron chains or cables, (of four cables each) by perpendicular lines of iron rods alternating from the four suspension cables, spreading five feet apart horizontally with each side of the road-way, framed of iron lattice, left deep and similarly latticed below the road-bed. The suspension-cables of each opening are firmly secured in mas of masonry resting near the points of constructio

A hanging-bridge, upon the construction as ab roughly suggested, (with all the necessary deta carried out,) it is ascertained from experime made, would have a surplus of upward of twel hundred tons remaining, denoting the strength the bridge; a weight that beyond probability wo never be upon the bridge at one point of time. T expense of constructing this bridge, would vary fr five hundred to eight hundred thousand dollars."

THE HUMAN BODY.

The ultimate elements of which the human bo is composed, are azote, or nitrogen, oxygen, a hydrogen; (gaseous fluids;) and carbon, phosphor calcium, sulphur, sodium, potassium, magnesiu and iron, (solid substances.) These bodies are ca ed elementary and ultimate, because they cannot resolved by any known process into more simp substances.

These elementary bodies unite with each oth in different proportions, and thus form compou substances. A certain proportion of azote uniti with a certain proportion of oxygen, hydrogen, a carbon, forms a compound substance possessing ce tain properties. Another proportion of azote uniti with a different proportion of oxygen, hydrogen, a carbon, forms another compound substance posses ing properties different from the former. Oxyge hydrogen, and carbon, uniting in still different pr portions without any admixture of azote, form third compound possessing properties different fro either of the preceding. The compounds thus for ed by the primary combinations of the elementa substances with each other are called PROXIMA PRINCIPLES.

Each proximate principle constitutes a distin form of animal matter, of which the most importa are named gelatin, albumen, fibrin, oily or fatty ma ter, mucus, urea, pichromel, osmazome, resin, a sugar.

By chymical analysis it is ascertained that all t proximate principles of the body, however they ma differ from each other in appearance and in prope ties, are composed of the same ultimate element Gelatin, for example, consists (in 100 parts) of azo $16\frac{988}{1000}$, oxygen $27\frac{207}{1000}$, hydrogen $7\frac{914}{1000}$, carbo $47\frac{881}{1000}$ parts. The elementary bodies uniting the above proportions form an animal substanc soft, tremulous, solid, soluble in water, especial when heated, and on cooling, which may be consi ered as its distinctive property, separating from its s lution in water into the same solid substance, witho undergoing any change in its chymical constitutio

Again, albumen consists of azote $15\frac{705}{1000}$, oxyg $23\frac{872}{1000}$, hydrogen $7\frac{540}{1000}$, carbon $52\frac{883}{1000}$ parts. T elementary bodies uniting in these different propo tions, there results a second proximate principle, a adhesive fluid, transparent, destitute of smell a taste, miscible in water, but when subjected to temperature of about 165°, converted into a sol substance no longer capable of being dissolved water. This conversion of albumen from a flui which is its natural state, into a solid, by the app cation of heat, is called coagulation. It is a proce familiar to every one. The white of an egg is nearly pure albumen, naturally a glairy and adhesive fluid: by boiling, it is coagulated into a white and firm solid.

In like manner, fibrin consists of azote $19\frac{934}{1000}$, oxygen $19\frac{685}{1000}$, hydrogen $7\frac{021}{1000}$, carbon $53\frac{360}{1000}$ parts, forming a solid substance of a pale whitish colour and firm consistence, the peculiar character of which is its disposition to arrange itself into minute threads or fibres.

On the other hand, fat or oil, which is a fluid substance of a whitish yellow colour, inodorous, nearly insipid, unctuous, insoluble in water and burning with rapidity, consists of a larger proportion of hydrogen, a small proportion of oxygen, and a still smaller proportion of carbon, without any admixture of azote.

From this account of the composition of the proximate principles, which it is not necessary to extend farther, it is manifest that all of them consist of the same ultimate elements, and that they derive their different properties from the different proportions in which their elements are combined.

The ultimate elements that compose the body are never found in a separate or gaseous state, but always in combination in the form of one or other of the proximate principles.

In like manner, the proximate principles never exist in a distinct and pure state, but each is combined with one or more of the others. No part consists wholly of pure albumen, gelatin, or mucus, but albumen is mixed with gelatin, or both with mucus.

Simple or combined, every proximate principle assumes the form either of a fluid or of a solid, and hence the most general and obvious division of the body is into fluids and solids. But the terms fluid and solid are relative, not positive; they merely express the fact that some of the substances in the body are soft and liquid compared with others which are fixed and hard; for there is no fluid, however thin, which does not hold in solution some solid matter, and no solid, however dense, which does not contain some fluid.

Fluids and solids are essentially the same in nature; they differ merely in their mode of aggregation; hence the easy and rapid transition from the one to the other which incessantly takes place in the living body, in which no fluid long remains a fluid, and no solid a solid, but the fluid is constantly passing into the solid, and the solid into the fluid.

The relative proportion of the fluids in the human body is always much greater than that of the solids; hence its soft consistence and rounded form. The excess, according to the lowest estimate, is as 6 to 1, and according to the highest, as 10 to 1. But the proportion is never constant; it varies according to age and to the state of the health. The younger the age, the greater the preponderance of the fluids. The human embryo, when first perceptible, is almost wholly fluid: solid substances are gradually but slowly superadded, and even after birth the preponderance is strictly according to age; for in the infant, the fluids abound more than in the child; in the child, more than in the youth; in the youth, more than in the adolescent; in the adolescent, more than in the adult; and in the adult, more than in the aged. Thus, among the changes that take place in the physical constitution of the body in the progress of life, one of the most remarkable is the successive increase in the proportion of its solid matter: hence the softness and roundness of the body in youth; its hard, unequal, and angular surface in advance life; its progressively increasing fixedness and immobility in old age, and ultimate inevitable death.

The fluids are not only more abundant than the solids, but they are also more important, as they afford the immediate material of the organization of the body; the media by which both its composition and its decomposition are effected. They bear nourishment to every part, and by them are carried out of the system its noxious and useless matters. In the brain they lay down the soft and delicate cerebral substance; in the bone, the hard and compact osseous matter; and the worn-out particles of both are removed by their instrumentality. Every part of the body is a laboratory in which complicated and transforming changes go on every instant; the fluids are the materials on which these changes are wrought; chymistry is the agent by which they are affected, and life is the governing power under whose control they take place.

The fluids, composed principally of water holding solid matter in solution, or in a state of mechanical division, either contribute to the formation of the blood, or constitute the blood, or are derived from the blood; and after having served some special office in a particular part of the system, are returned to the blood; and according to the nature and proportion of the substances they contain, are either aqueous, albuminous, mucous, gelatinous, fibrinous, oleaginous, resinous, or saline.

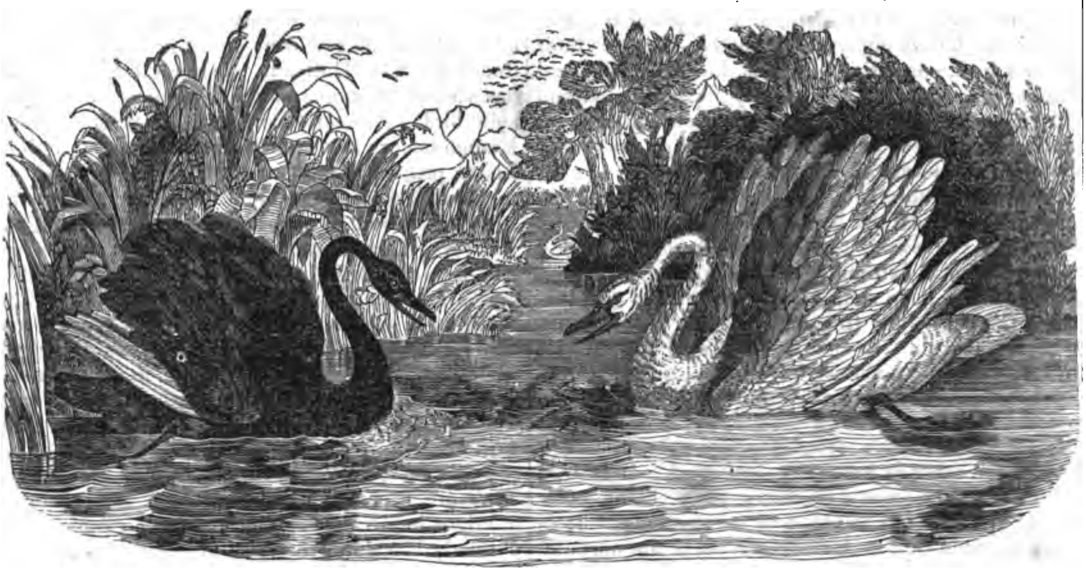
When the analysis of the different kinds of animal matter that enter into the composition of the body has been carried to its ultimate point, it appears to be resolvable into two primitive forms: first, a substance capable of coagulation, but possessing no determinate figure and secondly, a substance having a determinate figure and consisting of rounded particles. The coagulable substance is capable of existing by itself; the rounded particles are never found alone, but are invariably combined with coagulated or coagulable matter. Alone or combined with the rounded particles, the coagulable matter forms when liquid, the fluids, when coagulated, the solids.

When solid, the coagulable substance is disposed in one of two forms, either in that of minute threads or fibres, or in that of minute plates or laminæ; hence every solid of the body is said to be either fibrous or laminated. The fibres or laminæ are variously interwoven and interlaced, so as to form a net-work or mesh; and the interspaces between the fibres or laminæ are commonly denominated areolæ or cells.

This concrete substance, fibrous or laminated, is variously modified either alone or in combination with the rounded particles. These different modifications and combinations constitute different kinds of organick substance. When so distinct as obviously to possess a peculiar structure and peculiar properties, each of these modifications is considered as a separate form of organized matter, and is called A PRIMARY TISSUE.

He who refuses to do justice to the defenceless, will often be found making unreasonable concessions to the powerful.

NATURAL HISTORY.



[The Black and White Swan.]

THE BLACK AND WHITE SWAN.

Of the characters by which the Swans are distinguished from the rest of the family to which they belong, the most remarkable are the extreme length of their necks; the oval shape of their nostrils, which are placed about the middle of their bill; the nakedness of their cheeks; the equal breadth of their bills throughout; the great depth of that organ at the base, where the vertical considerably exceeds the transverse diameter; and the position of their legs behind the centre of gravity. They are by far the largest species of the family; and there are very few birds that exceed them in magnitude. They live almost constantly on the water, preferring the larger streams and open lakes; and feed chiefly on aquatick plants, the roots of which they are enabled to reach by means of their long necks, for they rarely if ever plunge the whole of their bodies beneath the surface. They also devour frogs and insects, and occasionally, it is said, even fishes; but this last assertion is contradicted by almost every observer who has attended particularly to their habits, and seems quite at variance with the fact that the fish-ponds to which they are sometimes confined do not appear to suffer the smallest diminution in the number of their inhabitants from the presence of these inoffensive birds. We are moreover informed by Mr. Yarrell that he has never found in the stomachs of any of the numerous individuals dissected by him the least vestige of such a diet. In their habits they are as peaceable as they are majestick in form, elegant in attitude, graceful in their motions, and, in the two species that are most commonly known to us, unsullied in the purity of their white and glossy plumage.

The distinguishing characteristicks of the tame Swan, are found chiefly in its bill, which is throughout of an orange red, with the exception of the edges of the mandibles, the slight hook at the extremity, the nostrils, and the naked spaces extending from the base toward the eyes, all of which are black. A large protuberance, also of a deep black, surmounts the base of the bill; the iris is brown; and the legs black, with a tinge of red. All the plumage, without exception, in the adult bird, is of the purest white. In length the full grown male measures upward of five feet, and more than eight in the expanse of its wings, which reach, when closed, along two thirds of the tail. Its weight is usually about twenty pounds, but it sometimes attains five and twenty or even thirty; and those which inhabit the southern coast of the Caspian are said to reach a still more enormous size. The female is rather smaller than the male; her bill is surmounted by a smaller protuberance: and her neck is somewhat more slender. When first hatched the young are of a dusky gray with lead-coloured bill and legs; in the second year their plumage becomes lighter, and their bill and legs assume a yellowish tinge; in the third year they put on the adult plumage and colouring of the naked parts.

The females choose for their nesting-place the least frequented situations on the banks of the rivers or lakes which they inhabit, and build their nests in the rudest manner of twigs and reeds, lined with a comfortable coating of their breast feathers. They lay six or eight grayish eggs, and sit for five weeks generally in April and May. As soon as the young birds are hatched, they are carried by both parents to the water, and for two or three weeks afterwards are borne upon their backs, or placed for shelter and warmth beneath their wings. The attentions of the parent birds are continued until the next pairing season, when the old males drive the young from their society, and compel them to shift for themselves. To prevent the tame ones from flying away, it is necessary every year to clip their quill-feathers; and this mutilation seems to deprive them not only of the power, but also of the desire, to regain their liberty

They accustom themselves with ease to the society of man, and seem even to become attached to him, probably in consequence of the kindness with which they are everywhere treated, and the peculiar privileges which they enjoy at his hands. Besides their natural food, consisting of plants, insects, snails, and similar productions, they eagerly devour bread and all kinds of grain, and in winter are chiefly kept on these substances, and the same kind of provender that is given to ducks and geese.

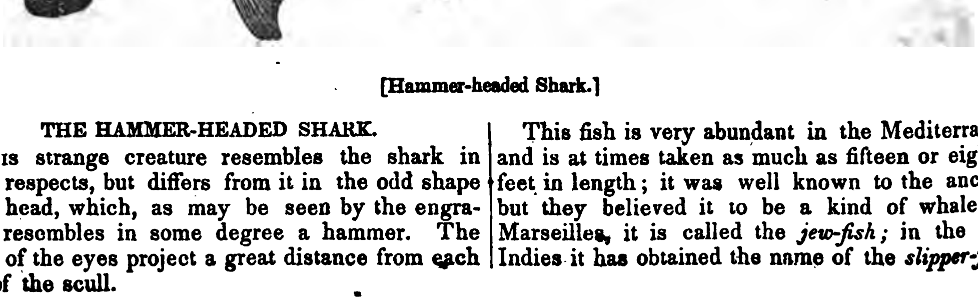
Although naturally one of the most gentle and inoffensive of birds, the large size and great muscular power of the swan, render it a formidable enemy when driven to extremity, and compelled to act on the defensive. In such a case it is said to give battle to the eagle, and frequently even to repel his attack, forcing him to seek his safety in flight. It never attempts to molest any of the smaller waterfowl that inhabit its domains; but in the season of its amours it will not suffer a rival to approach its place of retreat without a sanguinary struggle, in which one or the other is generally destroyed. It is said to attain a very great age, thirty years being commonly spoken of as the term of its existence. It is even asserted that in Alkmar, a town in the north of Holland, there died, in the year 1672, a swan belonging to the municipality, which bore on its collar the date of 1573, and must consequently have been a century old; and several other instances of a similar nature have been related by authors. We must confess, however, that we entertain strong doubts of the authenticity of such statements, founded merely on popular tradition and unsupported by any positive evidence.

So much for the white swan. We must now give a few remarks in regard to the black swan figured in our cut.

When the classical writers of antiquity spoke of the black swan as a proverbial rarity, so improbable as almost to be deemed impossible, little did they imagine that in these latter days a region would be discovered, nearly equal in extent to the Roman empire even at the proudest period of its greatness, in which their "rara avis" would be found *in* as *great* abundance as the common wild swan upon the lakes of Europe. Such, however, has been one of the least singular among the many strange and unexpected results of the discovery of the great southern continent of New Holland. Scarcely a traveller who has visited its shores omits to mention this remarkable bird. An early notice of its transmission to Europe occurs in a letter from Witsen to Dr. Martin Lister, printed in the twentieth volume of the Philosophical Transactions; and Valentyn published in 1726 an account of two living specimens brought to Batavia. Cook, Vancouver, Philip, and White, mention it incidentally in their voyages; and Labillardière, in his narrative of the expedition of D'Entrecasteaux in search of La Pérouse, has given a more particular description, together with a tolerable figure.

Since this period many living individuals have been brought to England, where they thrive equally well with the Emeus, the Kanguroos, and other Australian animals, insomuch that they can now scarcely be regarded as rarities even in that country. They are precisely similar in form and somewhat inferiour in size to the wild and tame swans, but are perfectly black in every part of their plumage, with the exception of the primary and a few of the secondary quill-feathers, which are white. Their bill is of a bright red above, and is surmounted at the base in the male by a slight protuberance, which is wanting in the female. Towards its anteriour part it is crossed by a whitish band. The under part of the bill is of a grayish white; and the legs and feet are of a dull ash-colour. In every other respect, except in the mode of convolution of its trachea, this bird corresponds perfectly with its well known congeners.

The black swans are found as well in Van Diemen's Land as in New South Wales and on the western coast of New Holland. They are generally seen in flocks of eight or nine together, floating on a lake; and when disturbed, flying off like wild geese in a direct line one after the other. They are said to be extremely shy, so as to render it difficult to approach within gunshot of them.



[Hammer-headed Shark.]

THE HAMMER-HEADED SHARK.

This strange creature resembles the shark in many respects, but differs from it in the odd shape of its head, which, as may be seen by the engraving, resembles in some degree a hammer. The orbits of the eyes project a great distance from each side of the scull.

This fish is very abundant in the Mediterranean, and is at times taken as much as fifteen or eighteen feet in length; it was well known to the ancients, but they believed it to be a kind of whale. At Marseilles, it is called the *jew-fish;* in the West Indies it has obtained the name of the *slipper-fish.*

[The Gems-Bok, or Oryx.]

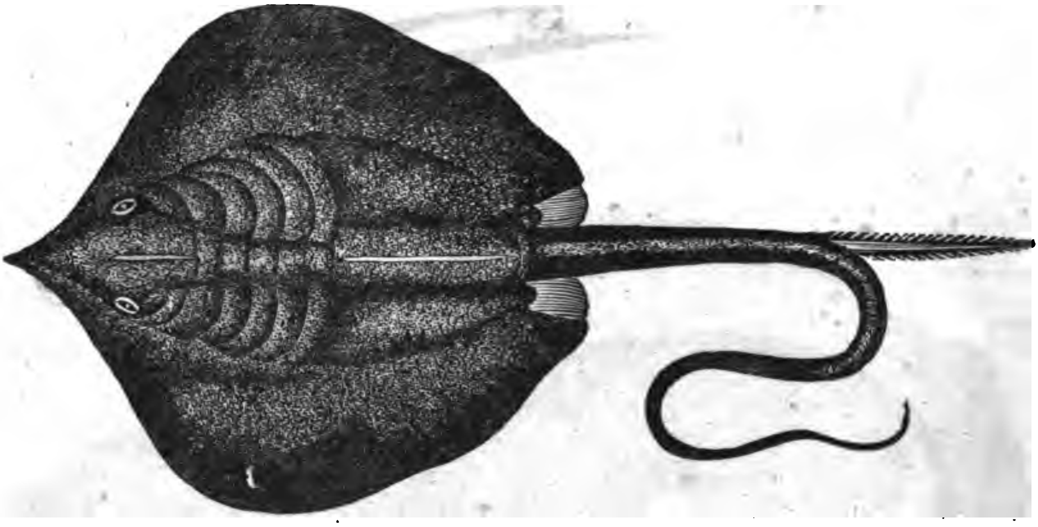
THE GEMS-BOK.

The genus Boher, is, in all probability, the oryx of the ancients, and may (indeed must) in their days have been much more widely distributed than it is now. It is said still to exist not only in that part of Africa which lies opposite the south of Arabia, but in the latter country, and in Persia, as far as the Indies, being, in all its localities, the southern neighbour of the gazelle and its varieties. The data are not complete enough for certainty; but this is probable, as the *isothermal* line does *tend* in that direction; and it is all, partially at least, within the action of the rains. In former times it must, from the extent of plain which has been converted into desert, have extended much farther, and it is not possible to suppose that any one acquainted with Egypt could have been ignorant of it. It is a gregarious animal, and an inhabitant of the plains; but it browses on the leaves of trees, principally those of the acacias, and not the saline plants, like the gazelle; and therefore when, in its progress toward the desert, the country came to produce only gazelle's food, the abu-harb (the *oryx*) must have departed or perished. As its general habits resemble those of the gazelle, it is highly probable that there are, as in that animal, many climatal varieties; and that what have been sometimes described as different species are the same. It must not be forgotten that, as the progress of cultivation has broken the domesticated ruminantia of Europe into many varieties, the progress toward desolation has done the same with the wild ruminantia of the districts under notice.

This species is rather stout in the body. Its general colour is white, variously marked with black on the forehead and brush in which the tail terminates, with brown on the legs, and with rust-colour between the brown and white. The horns are long, slender, and very slightly bent from the curve of the forehead throughout their length. This is the animal, the profile of which with the horns seen as one, is supposed to have suggested the notion of the fabled unicorn; and the robust make, the long tail with a brush, the mane, though that is much exaggerated, and all the characters of the animal, give some probability to a conjecture which can neither be established nor refuted.

THE STING-RAY.

It would be almost an endless task to enumerate all the animals to whom dangerous and fatal properties have been attributed by the ignorant; and even now, though experiment after experiment has been made, proving the falsehood of the greater part of these assertions, many exist, who, fond of the marvellous, and unwilling to relinquish old prejudices,



[The Sting-Ray.]

still believe in all these wonderful tales. We quote from an old author, a prose description of this fish, in which its dangerous qualities are exaggerated.

"The inhabitants of the sea that are large enough to devour men are very many, but those which have a power of hurting otherwise, more than by the absolute wound of their bite, are very few. In the first place among these, however, is to stand the fierceflair, or fireflair, as it is commonly called.

The tail is the creature's weapon of defence, but it is a mischievous fish, and will use it offensively. The method in which it does this, is by drawing the tail swiftly round the person's leg or body, as a man of judgement would draw the long lash of a hunting-whip to make it cut; and it thus strikes the end of the bone deep into the flesh."

The large notched bone beneath the tail of this creature is capable, no doubt, of inflicting a severe wound; but in this consists all the danger, and the poisonous qualities supposed to belong to it are merely imaginary. The sting-ray is found in almost every part of the world; in the European seas it seldom attains a large size, but in some parts of the world, particularly New Holland, it is found weighing as much as four hundred pounds.

In some parts of America, the notched bone of this fish is used instead of a saw. In Japan, although the venomous properties of this bone are still considered real, yet with strange inconsistency it is employed as a remedy against the bite of serpents.

Tongue of the Duck. When we consider the particular use which the duck makes of his tongue, we shall immediately perceive that it is endowed with great and unusual sensibility. The duck, unlike all other birds, discriminates its food, not by sight or by smell, but by the touch of its tongue. It thrusts its bill into the mud, just as a fisherman throws his net into the sea, and brings up whatever it contains; from the mouthful of stuff it selects by the tongue alone, what is good, and every thing else is rejected.

LINES ON THE ADMISSION OF MICHIGAN INTO THE UNION.

BY MRS. SIGOURNEY.

Come in, little sister, so healthful and fair,
Come, take in our father's best parlour a share,
You've been kept long enough at the nurse's, I trow,
Where the angry lakes roar, and the northern winds blow
Come in—we've a pretty large household, 'tis true,
But the twenty-five children shall make room for you.

A present, I see, for our sire you have brought,
To add to his dessert—how kind was the thought—
A treat of ripe berries, both crimson and blue,
And wild flowers to stick in his button-hole too;
The rose from your prairie—the nuts from your tree—
What a good little sister!—come hither to me.

You've a dowry, beside, very cunningly stored,
To fill a nice cupboard, or spread a broad board,
Detroit, and Chicago, Ann-Arbour, and more—
For the youngest, methinks, quite a plentiful store;
You're a prog, I perceive—it is true to the letter,
And your sharp Yankee sisters will like you the better.

But where are your Indians, so feeble and few—
So fall'n from the heights where their forefathers grew!
From the forests they fade—o'er the waters that bore
The names of their baptism, they venture no more;
Oh, soothe their sad hearts, ere they vanish afar,
Nor quench the faint beam of their westering star!

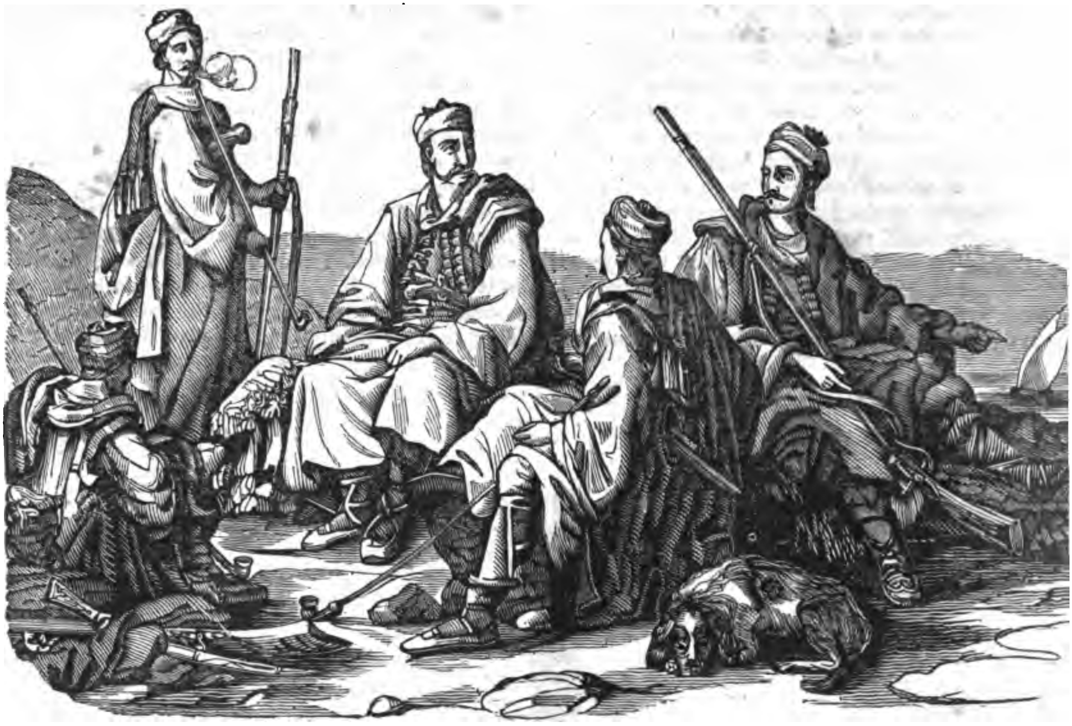
Those ladies who sit on the sofa so high,
Are the stateliest dames of our family;
Your thirteen old sisters—don't treat them with scorn—
They were notable spinsters before you were born,
Many stories they know, most instructive to hear—
Go, Make them a court'sy, 'twill please them, my dear.

They can teach you the names of those great men to spell,
Who stood at the helm, when the war-tempest fell;
They will show you the writing that gleam'd to the sky
In the year seventy-six, on the fourth of July,
When the flash of the Bunker-hill flame was red,
And the blood gush'd forth from the fields of dead.

There are some who may call them both proud and old,
And say they usurp what they cannot hold;
Perhaps their bright locks have a sprinkle of gray—
But then, little Michy, don't hint it, I pray!
For they'll give you a frown, or a box on the ear
Or send you to stand in the corner, I fear.

They indeed bore the burden and heat of the day,
But you've as good right to your penny as they;
Though the price of our freedom they better have known,
Since they paid for it out of their purses alone,
Yet a portion is saved for the youngest, I ween,
So, hold up your head, with the "old thirteen."

Knickerbocker.

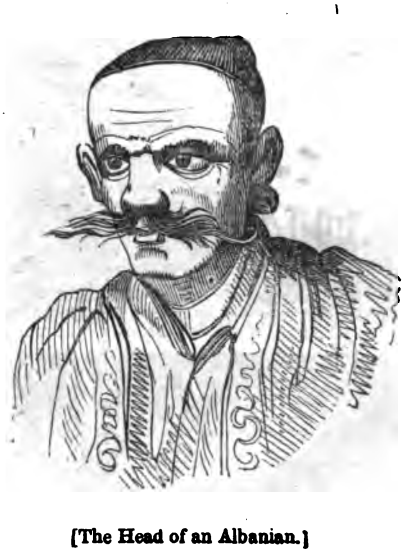


[Albanian Soldiers.]

LIVING COSTUMES.

The above cut represents a party of Albanians, natives of Albania, called in the Turkish language *Arnaut;* in the Albanian, *Skiperi;* (Epirus and Illyria;) a province in Arnaut-Wilajeti, extending from the Drino to the Acroceraunian mountains along the coast of the Adriatick and Ionean seas. It has a delicious climate, and produces in abundance, wine, grain, oil, tobacco, cotton, wood, mineral salt, and horned cattle. The principal mountains are the Montenegro and the Chimera; the principal rivers, are the Drino, Bojana, Somini, &c. The three hundred thousand inhabitants are composed of Turks, Greeks, Jews, and Arnauts; the last of which constitute the boldest soldiers in the Turkish armies. The country is divided into the pachalicks of Janina, Ilbessan, and Scutari, and the sangiacats of Aulona and Delvino. The principal cities are Janina, Delvino, Scutari, Durazzo, Argyro-Castro, Valona, &c. The authority of the Porte in this region is very uncertain, being more or less relaxed in proportion as the independent communities and beys enlarge or contract their possessions, in opposition to the pachas whom it appoints. The vast mountainous coast of Albania is very little known. The Venetian government, while the republick of Venice existed, defended it against any permanent conquest by the Turkish pachas. Here Greek and Catholick Christians, and Mohammedans likewise, live in a half savage state, and under the most varied forms of government. At the time of the revolt of the Greeks the most southern part of Albania took the ancient name of *Epirus*. From the lake of Janina, ar the rivers Acheron and Cocytus, not far from t mouth of which lies Parga. Epirus, especially the neighbourhood of the sea, is a fertile country produces wine, corn, and fruit. In ancient tim its horses were famed for swiftness, its cows for si and its dogs for strength and courage. These rac seem now to be extinct. The Albanian countenan is peculiarly characteristick, as is shown in the companying portrait, drawn by a late traveller.

Before the Greek revolution, Ali Pacha ruled



[The Head of an Albanian.]

Janina. In Scutari, there are yet independent communities, the inhabitants of Mount Montenegro, the Suliots, and others in the neighbourhood of the former Venetian, now Austrian territory. These small free tribes enjoyed, as long as the republick of Venice existed, the secret protection of that government; to which is to be attributed their success in maintaining themselves against the Turkish force, and the violence of private feuds. The same policy was pursued likewise by the French Illyrian government. In the country itself, the Arnauts are called *Skypetars*. They are bold and indefatigable, but mercenary and perfidious warriours. They once constituted the flower of the Turkish army. Every one who has no landed property, seeks to acquire the means of obtaining it, by incursions into the neighbouring territory, or military service in foreign countries. The sons of influential families, or distinguished soldiers, collect a troop, and, like the former *condottieri* of Italy, sell their aid to any one who will pay them well. This migration of armed hordes, caused by the want of landed property sufficient to support them, is a national instinct, common to the Greek, Catholick, and Mohammedan Arnauts. For this reason, the communities in the most fertile valleys rarely increase, and there is a great disproportion of unmarried females. But in case of attack, the women defend their homes and property with masculine courage. The political influence of the clergy is great among the Christian Arnauts

[Temple of Schoo-Madou, at Pegu.]

TEMPLE OF SCHOE-MADOU, AT PEGU.

Pegu, the former capital of the kingdom of that name, was formerly a large and magificent city: in 1757, however, it was attacked by the Burmese conqueror, Alompra, who destroyed it, dispersed a portion of its inhabitants and led the others away captive. The numerous temples of Pegu, were the only buildings which were left; although the city was rebuilt in 1790, all these edifices were neglected, except the great temple of Schoe-Madou or the god of gold, undoubtedly one of the loftiest and most remarkable buildings in Asia, curious from the character of its architecture, the antiquity of its construction, and the profound veneration in which it is held by the natives of Pegu.

Among the Burmese, gold is the symbol of excellence: they consecrate it to their gods and attribute its qualities to their king. All that belongs to him, and also their temples, have the epithet *Schoe*, which signifies *golden*. The name of the emperour is never mentioned except in connexion with this precious metal. When a Burmese states that the emperour has heard of any thing, he remarks, "that has reached the ears of gold." One who has had an audience with his sovereign, has been "admitted to the feet of gold." A noble Burmese once remarked to an English ambassador, that the perfume of otto of rose, was grateful to the nose of gold.

Thus the epithet *Schoe*, is characteristick of the temple of Pegu, only by the association of the word *Madon*, which seems to be a corruption of Mahadeva, or God. This temple is built on a double terrace: the first is ten feet high, the second, twenty: both form a parallelogram. The lower one measures thirteen hundred and ninety-one feet on one of its faces, and the upper, six hundred and eighty-four feet. You ascend to these terraces by large and sloping stone steps: at the base of the staircase are two lions which seem to guard the entrance. On each side are the residences of the rhahaans or priests, which rise four or five feet above the ground and comprise a single spacious room on which are benches to rest on.

The temple is a pyramid built of brick and mortar, in which there is neither hollow nor opening of any kind. It forms at its base an octagon, which becomes round as it rises. Each face of the octagon, is one hundred and sixty-two feet broad: but the immense diameter of the pyramid diminishes rapidly; it rises three hundred and thirty-one feet above the terrace on which it is situated and is consequently three hundred and sixty-one feet high. It is crowned by a kind of iron parasol, termed *tée*, without which no temple is complete. This tée is fifty-six feet in circumference, and a large number of bells are attached to it, which when agitated by the wind keep up a constant tinkling.

The Peguans believe this temple to have been founded two thousand three hundred years ago. Be this as it may, it is certainly curious and of great antiquity.

SQUATTERS OF LABRADOR.

Go where you will, if a shilling can there be procured, you may expect to meet with individuals in search of it.

In the course of last summer, I met with sever persons as well as families, whom I could not compare to any thing else than what in America we understand by the appellation of squatters. The methods they employed to accumulate property form th subject of the observations which I now lay befor you.

Our schooner lay at anchor in a beautiful basi on the coast of Labrador, surrounded by uncout rocks of granite, partially covered with stunted vegetation. While searching for birds and other objects I chanced one morning to direct my eye toward the pinnacle of a small Island, separated fron the mainland by a very narrow channel; and presently I commenced inspecting it with my telescope There I saw a man on his knees, with claspe hands, and face inclined heavenward. Before hin was a small monument of unhewn stones, supportin a wooden cross. In a word, reader, the perso whom I thus unexpectedly discovered, was engage in prayer. Such an incident in that desolate lanc was affecting, for there one seldom finds traces o human beings, and the aid of the Almighty, although necessary every where, seems there peculiarly required to enable them to procure the means of subsistence. My curiosity having been raised, I betook myself to my boat, landed on the rock, and scrambled to the place, where I found the man still on his knees. When his devotions were concluded, he bowed to me, and addressed me in very indifferent French. I asked him why he had chosen so dreary a spot for his prayers. "Because," answered he, "the sea lies before me, and from it I receive my spring and summer sustenance. When winter approaches, I pray fronting the mountains on the main, as at that period the karaboos come toward the shore, and I kill them, feed on their flesh, and form my bedding of their skins." I thought the answer reasonable, and as I longed to know more of him, followed him to his hut. It was low and very small, formed of stones plastered with mud to a considerable thickness. The roof was composed of a sort of thatching made of weeds and moss. A large Dutch stove filled nearly one-half of the place, a small port-hole, then stuffed with old rags, served at times instead of a window; the bed was a pile of deer-skins; a bowl, a jug, and an iron pot were placed on a rude shelf; three old and rusty muskets, their locks fastened by thongs, stood in a corner; and his buck-shot, powder, and flints, were tied up in bags of skin. Eight Esquimaux dogs yelled and leaped about us. The strong smell that emanated from them, together with the smoke and filth of the apartment, rendered my stay in it extremely disagreeable.

Being a native of France, the good man shewed much politeness, and invited me to take some refreshment, when, without waiting for my assent, he took up his bowl and went off I knew not whither. No sooner had he and his strange dogs disappeared, than I went out also, to breathe the pure air, and gaze on the wild and majestick scenery around. I was struck with the extraordinary luxuriance of the plants and grasses that had sprung up on the scanty soil on the little valley which the *squatter* had chosen for his home. Their stalks and broad blades reached my waist. June had come, and the flies, mosquitoes, and other insects filled the air, and were as troublesome to me as if I had been in a Florida swamp.

The squatter returned, but he was chapfallen;—nay—I thought his visage had assumed a cadaverous hue. Tears ran down his cheeks, and he told me that his barrel of *rum* had been stolen by the "eggers," or some fishermen! He said that he had been in the habit of hiding it in the bushes, to prevent its being carried away by those merciless thieves, who must have watched him in some of his *frequent* walks to the spot. "Now," said he, "I can expect none until next spring, and God knows what will become of me in the winter!"

Pierre Jean Baptiste Michaux had resided in that part of the world for upward of ten years. He had run away from the fishing-smack that had brought him from his fair native land, and expected to become rich some day by the sale of the furs, seal-skins, eider-down, and other articles which he collected yearly, and sold to the traders who regularly visited his dreary abode. He was of moderate stature, firmly framed, and as active as a wild-cat. He told me that excepting the loss of his rum, he had never experienced any other cause of sorrow, and that he felt as "happy as a lord."

Before parting with this fortunate mortal, I enquired how his dogs managed to find sufficient food. "Why, sir, during spring and summer they ramble along the shores, where they meet with abundance of dead fish, and in winter they eat the flesh of the seals which I kill late in autumn, when these animals return from the north. As to myself, every thing eatable is good, and when hard pushed, I assure you I can relish the fare of my dogs just as much as they do themselves."

Proceeding along the rugged indentations of the bay with my companions, I reached the settlement of another person, who, like the first, had come to Labrador with the view of making his fortune. We found him after many difficulties; but as our boats turned a long point jutting out into the bay, we were pleased to see several small schooners at anchor, and one lying near a sort of wharf. Several neat-looking houses enlivened the view, and on landing, we were kindly greeted with a polite welcome from a man who proved to be the owner of the establishment. For the rude simplicity of him of the rum-cask, we found here the manners and dress of a man of the world. A handsome fur-cap covered his dark brow, his clothes were similar to our own, and his demeanour was that of a gentleman. On my giving my name to him, he shook me heartily by the hand, and on introducing each of my companions to him, he extended the like courtesy to them also. Then, to my astonishment, he addressed me as follows:—"My dear sir, I have been expecting you these three weeks, having read *in the papers* your intention to visit Labrador, and some fishermen told me of your arrival at Little Natasguan. Gentlemen, walk in."

Having followed him to his neat and comfortable mansion, he introduced us to his wife and children. Of the latter there were six, all robust and rosy. The lady, although a native of the country, was of French extraction, handsome, and sufficiently accomplished to make an excellent companion to a gentleman. A smart girl brought us a luncheon, consisting of bread, cheese, and good port wine, to which, (having rowed fourteen or fifteen miles that morning,) we helped ourselves in a manner that seemed satisfactory to all parties. Our host gave us newspapers from different parts of the world, and shewed us his small but choice collection of books. He inquired after the health of the amiable Captain Bayfield, of the royal navy, and the officers under him, and hoped they would give him a call.

Having refreshed ourselves, we walked out with him, when he pointed to a very small garden, where a few vegetables sprouted out, anxious to see the sun. Gazing on the desolate country around, I asked him how *he* had thus secluded himself from *the world*. For it he had no relish, and although he had received a liberal education, and had mixed with society, he never intended to return to it. "The country around," said he, "is all my own, much farther than you can see. No fees, no lawyers, no taxes are *here*. I do pretty much as I choose. My means are ample, through my own industry. These vessels come here for seal-skins, seal-oil, and salmon, and give me in return all the necessaries, and indeed comforts, of the life I love to follow; and what else could *the world* afford me!" I spoke of the education of his children. "My wife and I teach them all that is *useful* for them to know, and is not that enough? My girls will marry their countrymen, my sons the daughters of my *neighbours*, and I hope all of them will live and die in the country!" I said no more, but by way of compensation for the trouble I had given him, purchased from his eldest child a beautiful fox's skin.

Few birds, he said, came around him in summer, but in winter thousands of ptarmigans were killed, as well as great numbers of gulls. He had a great dislike to all fishermen and eggers, and I really believe was always glad to see the departure even of the hardy navigators who annually visited him for the sake of his salmon, seal-skins, and oil. He had more than forty Esquimaux dogs; and, as I was caressing one of them, he said, "Tell my brother-in-law at Bras d'Or, that we are all well here, and that, after visiting my wife's father, I will give him a call!"

Now, reader, his wife's father resided at the distance of seventy miles down the coast, and, like himself, was a recluse. He of Bras d'Or was at double that distance; but, when the snows of winter have thickly covered the country, the whole family, in sledges drawn by dogs, travel with ease, and pay their visits, or leave their cards. This good gentleman had already resided there more than twenty years. Should he ever read this article, I desire him to believe that I shall always be grateful to him and his wife for their hospitable welcome.

When our schooner, the Ripley, arrived at Bras d'Or, I paid a visit to M. ——, the brother-in-law, who lived in a house imported from Quebec, which fronted the strait of Belle isle, and overlooked a small island, over which the eye reached the coast of Newfoundland, whenever it was the wind's pleasure to drive away the fogs that usually lay over both coasts. The gentleman and his wife, we were told, were both out on a walk, but would return in a very short time, which they in fact did, when we followed them into the house, which was yet unfinished. The usual immense Dutch stove formed a principal feature of the interiour. The lady had once visited the metropolis of Canada, and seemed desirous of acting the part of a "blue-stocking." Understanding that I knew something of the fine arts, she pointed to several of the vile prints hung on the bare walls, which she said were *elegant* Italian pictures, and continued her encomiums upon them, assuring me that she had purchased them from an Italian, who had come there with a trunk full of them. She had paid a shilling sterling for each, frame included! I could give no answer to the good lady on this subject, but I felt glad to find that she possessed a feeling heart. One of her children had caught a siskin, and was tormenting the poor bird, when she rose from her seat, took the little fluttering thing from the boy, kissed it, and gently launched it into the air. This made me quite forget the tattle about the fine arts.

Some excellent milk was poured out for us in clean glasses. It was a pleasing sight, for not a cow had we yet seen in the country. The lady turned the conversation on musick, and asked if I played on any instrument. I answered that I did, but very indifferently. Her *fort*, she said, was musick, of which she was indeed immoderately fond. Her instrument had been sent to Europe to be repaired, but would return that season, when the whole of her children would again perform many beautiful airs, for in fact any body could use it with ease, as when she or the children felt fatigued, the servant played on it for them. Rather surprised at the extraordinary powers of this family of musicians, I asked what sort of an instrument it was, when she described it as follows:—"Gentlemen, my instrument is large, longer than broad, and stands on four legs, like a table. At one end is a crooked handle, by turning which round, either fast or slow, I do assure you we make most excellent musick." The lips of my young friends and companions instantly curled, but a glance from me as instantly recomposed their features. Telling the fair one that it must be a hand-organ she used, she laughingly said, "Ah, that is it: it is a hand-organ, but I had forgot the name, and for the life of me could not recollect it."

The husband had gone out to work, and was in the harbour caulking an old schooner. He dined with me on board the Ripley, and proved to be also an excellent fellow. Like his brother-in-law, he had seen much of the world, having sailed nearly round it; and, although no scholar, like him, too, he was disgusted with it. He held his land on the same footing as his neighbours, caught seals without number, lived comfortably and happily, visited his father-in-law and the scholar, by the aid of his dogs of which he kept a great pack, bartered or sold his commodities, as his relations did, and cared about nothing else in the world. Whenever the weather was fair, he walked with his dame over the moss-covered rocks of the neighbourhood; and, during winter, killed ptarmigans and karaboos, while his eldest son attended to the traps, and skinned the animals caught in them. He had the only horse that was to be found in that part of the country, as well as several cows; but, above all, he was kind to every one, and every one spoke well of him. The only disagreeable thing about his plantation or settlement, was a heap of fifteen hundred carcasses of skinned seals, which, at the time when we visited the place, in the month of August, notwith ing the coolness of the atmosphere, sent f stench that, according to the ideas of some n ists, might have sufficed to attract all the vu the United States.

During our stay at Bras d'Or, the kind-h and good Mrs. —— daily sent us fresh mil butter, for which we were denied the pleas making any return.

Aud

BOTANY.

CATKINS.

With the earliest dawn of spring,

——"while yet the wheaten blade
Scarce shoots above the new-fallen shower of snow

a thousand beauties deck our woodland trees, to unobserving eyes appear to be only so many buds, the harbingers of future leaves. Little supposed that these "green buds" are clust flowers, which in most cases appear befor leaves, and which in the exquisite delicacy of colours, and the marvellous contrivance of forms, as much surpass the more showy blosso the summer's day in real soul-subduing intere the variegated glories of the dawning sun e the simple splendour of his noontide majesty. cannot express the pleasure we have felt, turning our backs for awhile upon the cold and gy haunts of men, we have journeyed on a morning to some thicket in the suburbs of the to regale our senses, and invigorate our minds a sight of the catkins, which hang from the with a profusion worthy of the beneficient who gave them life to perpetuate the specie beauty to charm the hearts of all those who pleasure therein.

We recommend our readers, some spring ing, when the sun is rising, to get into the cen a young wood, and if they have the least tast the unsophisticated charms of nature, we pr them a vision of beauty, so imposing in its and so curious in its details, that they will eve deplore with us the apathy and worldly-minde which deprive the great majority of our fellow- tures of such a sweet and purifying source of ment, and which caused the royal botanist of J upon another subject to exclaim, "A wise eyes are in his head."

A catkin is a tassel of *male* flowers, destitu calyx or coralla, in place of which a little sc produced. These scales, or bractæ, as the called by botanists, are placed one beneath the er round the stalk of the catkin with the most cise regularity. Each scale covers a numb stamens, which spring from its lower surface are shielded by it from wet and too great a d of light, just in the same way as our readers have observed the helmet-shaped petal in the mon white nettle protects the anthers and s which nestle in its concavity. Catkins are, fore, with the exception of the willow and som ers, clusters of stamen-bearing flowers; but if bore no other kind of flowers, we should be de in autumn of a great many useful fruits—the nut, acorn, and the like, which are so useful as the winter food of many animals. Our friends must therefore habituate themselves to look for the less showy *female* flowers; but in doing so, they will experience many difficulties. Let us suppose that the hazel is the subject of their investigation; they would have no trouble in pitching at once upon the catkins, or in separating and naming their component parts: all this would be quite easy: but where are the female flowers? Do any of the catkins bear them? They pull a hundred to pieces in vain, and are just on the point of giving up the pursuit, when a little scaly bud near the base of the catkins attracts their attention, from the circumstance of its being crowned with numerous short red threads, but in every other respect looking exactly like the leaf buds with which they had been confounded. These are the pistil-bearing flowers, and the red threads are the stigmas, which catch the pollon from the catkins. Thus far well; but our intelligent friends are not out of the wood yet. They would be justly proud of their discovery, and would certainly feel themselves to be fully competent to discover and investigate both the *male* and *female* flowers of *all* the catkin-bearing trees. We will suppose them, in this spirit, to attack a willow or a poplar; they gather catkin after catkin; but all those of the willow are *males*, and all from the poplar are *females*. This is an awful dilemma, and for the time utterly beyond their solution. The next day they search again, when, lo! the order of yesterday is reversed; the catkins of the willow from which they are now gathering are exclusively *females*, and of the poplar, *males!* Are they mistaken? They take the wisest, and if all history did not contradict the fact, one would suppose, the most immediate course. They go to the trees which they had examined yesterday, and find their first observations to be quite true. The simple truth then becomes manifest: some trees bear male and female flowers, others only male flowers, and others again only females. This distribution of the sexes, is the character upon which Linnæus founded his twenty-first and twenty-second classes. The first, named Monœcia, from *monos*, one, and *oikos*, house;—plants bearing stamens and pistils on the same plant; and the second, Diœcia, from *dis*, twice, and *oikos*, house;—plants bearing stamens and pistils on different plants.

Nearly four hundred species of trees flower in catkins; and upon this coincidence in their mode of fructification, a natural family has been erected, called Amentaceæ, from the word amentum, which is the botanical term for a catkin. In this noble group, all the timber trees of Europe, and most of those of all cold countries, are stationed. Every genus consists of plants important to the wants of man. The alder, the birch, the willow, the poplar, the oak, the chestnut, the hornbeam, the plane, and perhaps the elm, are all collected together in this family. The bark of nearly all the species is furnished with an astringent principle, which has rendered them valuable either for staining black, as in the alder and the oak-gall; or for tanning, as in the oak; or as febrifuges, as the alder, the birch, the oak, most of the willows, and also the Populus tremuloides, which is well known as a tonick and stomachick febrifuge. The fruit of many of the Amentaceæ contains a considerable proportion of fœcula, which renders it fit for the food of man and other animals, as the acorns of the oak, the mast of the birch, the nut of castanea and corylus, &c.

This great natural assemblage of trees has been divided, for the convenience of study, and in accordance with certain similarities in their floral structure, into five sub-orders: 1. Saliceæ, the Salix, or willow tribe, comprising the genera Salix and Populus. 2. Betulineæ, the Betula, or birch tribe; comprising Betula, Alnus, Carpinus, Ostrya, and Corylus. 3. Cupuliferæ, or nut-bearing tribe, with cups; comprising Quercus, Fagus, and Castanea. 4. Plataneæ, or plane-tree tribe; comprising Platanus and Liquidambar. 5. Myriceæ, or candleberry-myrtle tribe; comprising Comptonia, Myrica, Casuarina, and Nageia.

This arrangement, which is very clearly made, is not, however, sufficiently simple for those who are only yet on the threshold of botany, and for whom some less learned classification is necessary. We shall therefore proceed to describe the different genera, with occasional illustrations of their characters, according to the Linnæan method, which proceeds not upon the natural affinities of plants, but upon the number of their stamens, and when that cannot be conveniently followed, as in the present case, upon their sexes.

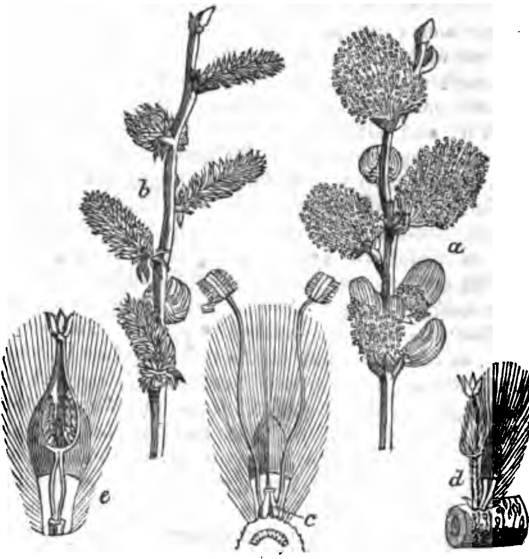
Amentaceous trees may be divided into—

I. Those which bear *diœcious* flowers, as willow, poplar, candleberry, myrtle, and nageia.

II. Those which bear *monœcious* flowers, as hornbeam, birch, alder, chestnut, beech, oak, hazel, plane, liquidambar, ostrya, comptonia, and causarina.

To these may be added the elm, which is certainly a catkin bearer, although it differs in so many particulars from the Amentaceæ, as to have made it necessary, in a strictly scientifick work, to put it in a different situation. For our purpose, however, it very properly finds a place here

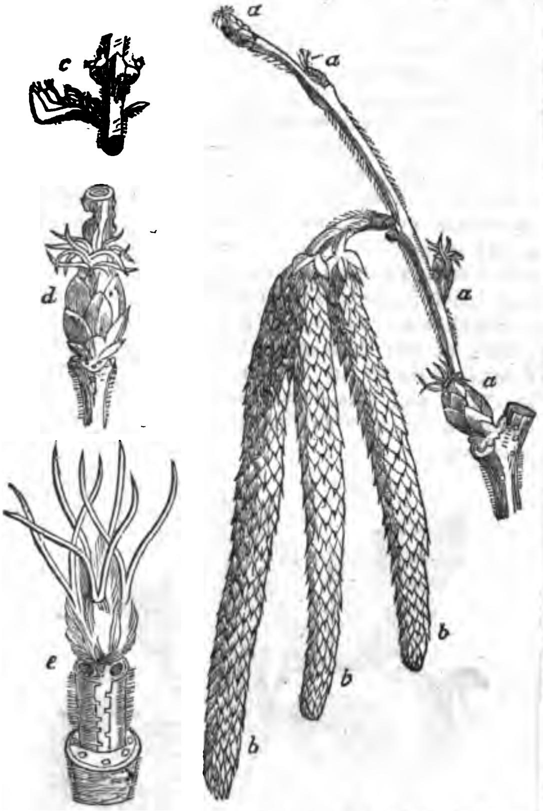
I. Diœcia.



Willow. *Salix caprea.* a Male catkins. b Female. c Male floret, magnified. d Female, natural size. e The same, magnified.

1. ***Salix***, the Willow. Of this genus there are one or two hundred species and varieties. Those of salix pentandria and amygdalina, are very large, of a bright red colour and, odoriferous. All of them bear a vast deal of cottony down to protect them against cold, which to many birds, and particularly the goldfinch, is of great use as a lining to their nests. The willow tribe is of great service to man. Salix alba affords a very useful timber, and is carried all over the world, together with salix triandra, to afford withies for the basket-maker.

2. *Populus*, the Poplar, called in Rome the arbor populi, or tree of the people. The catkins are full of curious design, and should be very carefully studied: those of the abele tree, or white poplar, are the best for the purpose. This is an elegant and useful genus. They grow rapidly, and produce an abundance of soft wood.



White Poplar. *Populus alba.* a a a Buds of female flowers. b b b Catkins of males. c Bracts, each containing eight stamens. d Female bud. e Female florets. The three last figures are magnified.

3. *Myrica.* Candleberry myrtle.

2. *Nageia.*

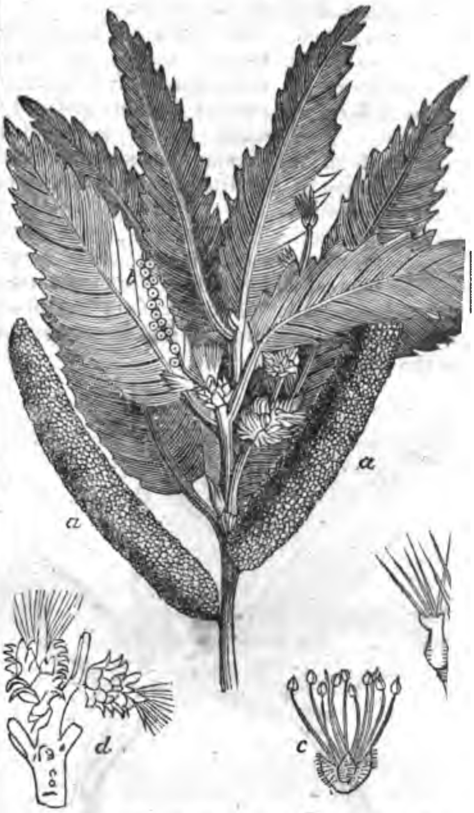
These are mostly bushy shrubs, natives of almost all parts of the world: they should be sought for in our great nurseries, and carefully investigated. It is wonderful to see how nicely the nearly approaching species are separated from each other. The myrica cerifera is remarkable for the production of a waxen berry, from which candles are sometimes made in this country.

II. Monœcia.

1 ***Carpinus***, the Hornbeam. This grows plentifully in hedges, and from March to the end of May, beguiles, by the beauty of its catkins, the
the weary but thinking traveller. It deri
name from two Celtick words, *car*, wood, a
the head—wood for the head, in allusion to
cient use, (which continues,) for the yokes o

2. *Betula*, the Birch. This tree has been
ed in a former number of the Family Magazi

3. *Alnus*, the Alder. By the side of a
with a March breeze shaking its catkins,
presents a more curious spectacle. The tw
pear to be covered with a host of writhing c
lars. The fructification, and the differences b
the bracts of the male and female catkins, sh
carefully distinguished. as, indeed, in all othe



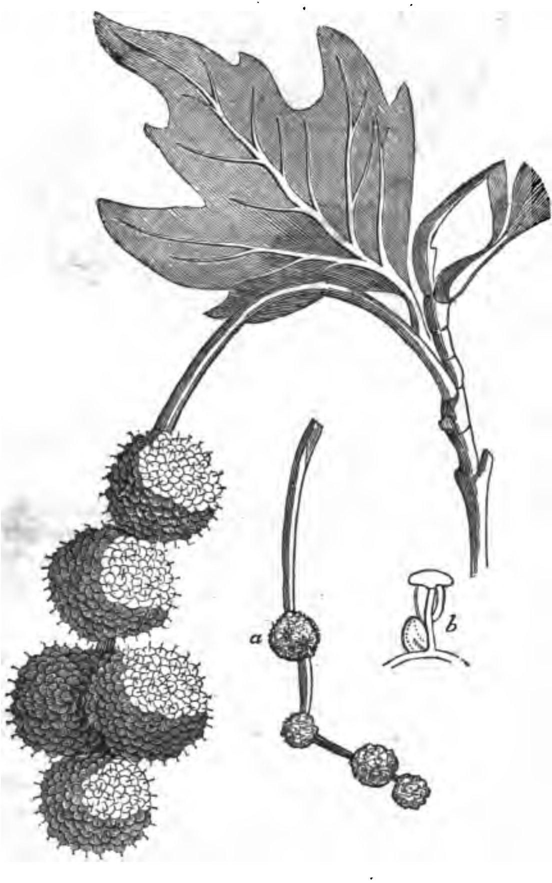
Chestnut. *Castanea vesca.* a a Male catkins. b Male floret, showing the stamens d Female floret from ditto.

4. *Castanea*, the Chestnut. The catki
chestnut are extremely curious. The ma
are arranged in the form of a loose pend
kin, which starts from the angle made b
stalk with the branch, called in botanical
the *axilla*, and the catkin is thence said t
lary. About twenty or more flowers c
moderately sized catkin. The flowers a
blossoms, having a calyx only, which is
top into six clefts, and carries from five
longish filaments. The anthers at the en
are large in proportion to their size, and e
quantity of pollen. The female flowers a
illary, but are so altogether unlike what i
conceived of a flower, that our little frie
first find some difficulty in recognizing t
such a name. Thev look like little b

over on the outside with sharp thorns, in the manner of a sea-egg (Echinus) which commonly ornaments our mantel-pieces. This prickly ball is called by botanists an *involucrum*, and from the circumstance of being covered with thorns, is said to be *thickly muricated*. It serves the purpose of a calyx, and encloses three florets. Each of these florets consists of a little urn-shaped cup, in the bottom of which is an ovary or germe of the future nuts, which bears on its summit six awl-shaped styles. One only of these germes reaches perfection. It is six celled, and contains the embryo of six nuts; but in the course of their growth four of them perish, and two only reach perfection. These are the chestnuts, which, when fully ripe, burst from their thorny enclosure, and fall to the ground.

5. *Fagus*, the Beech. The catkins of the beech usually grow so much beyond reach, that they should be sought for on the ground after a high wind. They differ from most of the preceding in being globular. The female should be studied through the whole of the summer season, and the gradual development of the fruit made the subject of particular observation.

6. *Quercus*, the Oak. The catkin is loose, long, and thread-shaped, and is seldom noticed, as it appears after the leaves, which hide it from observation. The "masquerade" of botany, as it has been called, is beautifully exhibited in the structure and growth of the female.



Plane. *Platanus occidenatlis.* Twig, with the globular female catkin *a* Male catkins. *b* Stamen.

7. *Platanus*, the Plane. This graceful tree bears but very small catkins, and owing to the height at which they grow, are rarely observed by the uninquiring. The clusters of the females, are, however, very large and conspicuous. In autumn a very beautiful mast is formed from them, which, after the fall of the leaves, hang like little balls all over the tree, and continue through the winter: *falling only when the ground is ready to receive them.*

8. *Corylus*, the Hazel. The catkins are loose, but covered with perhaps one hundred and fifty scales, beneath each of which there are eight anthers. This enormous provision is necessary to insure the impregnation of the pistils, which usually standing *above* these, might otherwise have suffered from the want of pollen. But as it is, that fructifying powder is emitted in such quantities, that on a fine sunny day the whole air round the tree is loaded with its golden-coloured particles.*

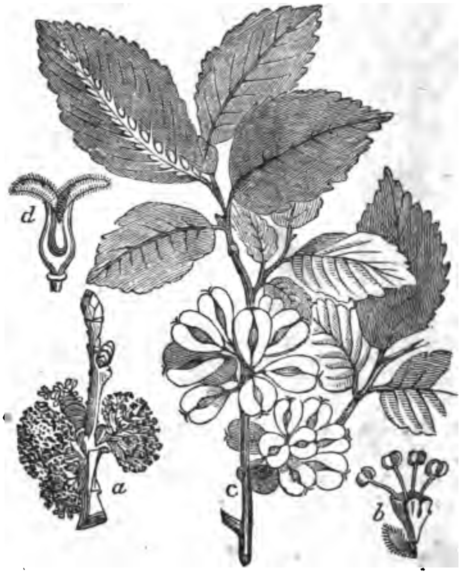
9. *Liquidambar.*

10. *Ostrya.*

11. *Comptonia.*

12. *Casuarina.*

These our limits prevent us from describing separately. And we merely notice them that our readers may not forget to get the flowers for their examination. That of ostrya will perhaps please them more than any we have enumerated, and is indeed a very extraordinary production. Liquidambar is so called from a balsam which is produced by the tree, and which is chewed by the Indians. Ostrya, from a Greek word signifying a scale, from the large scales of the catkins. Comptonia, after Henry Compton, Bishop of London, who first cultivated it in 1714: and Casuarina, from a supposed resemblance which its branches bear to the feathers of a cassowary.



Common elm, *Ulmus campestris.* *a* Male flowers. *b* Male floret, with the stamens. *c* Branch, with the female flowers. *d* The stigma of ditto.

We have only now to notice the Elm, (Ulmus,) which, as we have already hinted has by some been separated from the Amentaceæ, and made the type of a distant family, called Ulmaceæ. The elm bears male and female flowers upon the same tree. The males grow in bunches containing fifty or more florets in each, and are always found on the upper parts of the tree. The females appear after the males have perished, and have their germes curiously winged with a flat and stiff membrane which invests them.

CONCHOLOGY.

(Continued.)

Of the benefits derived by mankind from shells, or rather their animals, less is probably known at this moment than could be wished, or might be expected; they will only be developed by time. We need scarcely mention the oyster, for which our native shores have been so long famous; since, so far back as the beginning of the second century, the Roman poet Juvenal, while satirising the epicure Montanus, thus speaks of them:—

> "He, whether Circe's rock his oysters bore,
> Or Lucrine lake, or distant Richboro's shore.
> Knew at first sight."

These, with muscles, cockles, sallops, &c., form a considerable branch of commerce and wealth to the enterprising fisherman.

Many other species of shell-fish might also be enumerated, affording an agreeable and nutritive food to nations compelled by local situation, uncongenial climate, or ignorance of civilized improvement, to seek from ocean's bounteous store, a natural and never-failing source of subsistence, frequently, indeed, the principal, if not the only one within their reach. In the days of Roman epicurism we have already enumerated snails and oysters, to these may be added *Echini* and *Balani*, for we are told, that at the famous supper given by Lentulus when he was made Flamen Martialis, or Priest of Mars, these and other shell-fish formed a part of the delicacies presented to the guests; and Pennant satirically observes, they seemed to have been eaten by the holy personages, priests and vestals, invited on the occasion, as a whet for the second course. The *Echinus*, however, is a crustaceous and not a testaceous mollusc, as we shall explain under its description: we have tasted both this and the *Barnacle*, but not possessing Roman stomachs, or perhaps from the want of classical cooks, we confess they appeared anything but eatable to our vulgar taste. As baits to catch fish, many species of shells are used; we have, ourselves, captured many a bright mackerel and whiting with no other lure than a small piece of mother-o'-pearl suspended from the hook. The amphibious mammalia, sea-birds, and even many fishes, derive a large portion of their sustenance from shell-fish, which tends to check, without destroying altogether, the innumerable broods hourly brought into existence. Except as food, shell-fish contribute but little to supply the other wants of mankind. The *Pinna Marina* does, it is true, furnish with its byssus, or beard as it is commonly called, a silky filament, in sufficient abundance to be fabricated into gloves, stockings, and some few other articles of wearing apparel, but not in such quantities as to render them articles of general use, or commercial speculation, beyond the value attached to them as museum rarities. The *Janthina*, *Buccinum*, and other shells, indicate t presence of a strong colouring matter, and a speci of *Purpura* produced the highly valued Tyrian p ple dye, which formed a very costly article in t catalogue of Roman extravagance; but the same c our being now obtained by the chymical effects mineral or vegetable matter, at a trifling expense, h of course, superseded its use. In early treatises medicine, shells ranked as useful agents; they, ho ever, now form no part of the pharmacopœia, co mon chalk being equally efficacious. In countri where the manufacture of glass is either unknown too expensive to be generally used, a shell of t genus *Placuna* is substituted to the present day, extremely thin valves permitting the rays of light pass partially through them. With these, in Chi and Japan, the windows may be said to be glaze As a commercial circulating medium, shells ha been employed on the coast of Africa, where seal bags of the *Cyprea moneta* (money cowry) form t lies for certain sums; thus exchanging hands in t trading operations of uncivilized nations, as an equi alent for coin, and redeemable by the party issui them with the same good faith that notes are hono ed by the firm on which they are drawn. As ar cles of luxury and decoration, shells, from the mo remote period of history, have afforded personal c naments, in various ways, to civilised and sava people. With some they are distinctive marks rank, and in the idolatrous worship of India, som species are consecrated to ignorant superstition, those "who sit in darkness and who see no light The *Avicula margaritifera*, commonly called t mother-of-pearl oyster, is universally well known yielding that beautiful iridescent substance, fro which numberless elegant and useful trinkets a fashioned by skilful workmen. It must be observe however, that the beautiful colours, like those of t *Opal*, which they resemble, are not the effect of an pigment or colouring matter but occasioned by t mechanical arrangement of the molecules, or atom of matter, constituting the lamellar substance of t shell, being so distributed as to become capable c decomposing the rays of light, and reflecting the e quisite prismatick hues which all pearly or nacreou shells exhibit. On this subject the philosophic experiments of Brewster and others are highly i teresting. It is the animal of this shell, or a disea ed condition of it, which produces that modest b highly coveted jewel, the Oriental pearl, the prid of Europe's fairest daughters, or Africk's sable chi dren—the gem that decks a monarch's brow, c graces native innocence. In sacred writing, pearl are frequently named as things of inestimable valu "No mention shall be made of coral or of pearls, fo the price of wisdom is above rubies;" and in Matthe our Saviour said, "The kingdom of heaven is lik a merchantman seeking goodly pearls, who, whe he had found one pearl of great price, went and sol all he had and bought it." Poets of every nation but particularly those of the eastern nations, hav compared the objects of their dearest affections t pearls, as the most invaluable things known, it Persian name *Mervarid*, or globe of light, bein constantly used in the hyperbolical language of ori ental poetry.

Several other species of shells, both marine an fresh water, also produce pearls—the *Pinna marina*

Tridacna gigas, *Unio*, *Mussel*, *&c.*, they are, however, far inferiour in beauty and value.

Having enumerated some of the known benefits mankind derive from shells, whether as food, ornament, or otherwise, it will be proper to point out such as are injurious, or so considered in certain points of view, that is, so far as their habits tend to defeat the industry or ingenuity of man; but here, as in the instance of the common snail, we feel called upon to enter a philosophical protest against treating them indiscriminately as destructives and enemies. The evil they commit is certainly manifest, but it is confined to a very limited circle—it may be every where checked, or prevented by care or art—while the good they perform, being unseen and extended over an immense space, passes unheeded, and, in the present state of our knowledge of natural history, is not appreciated as it should be; let it, however, be remembered, that there is an eternal fitness of things which requires that the decrease of various portions of creation should, in some degree, keep pace with their otherwise superabundant growth, thus balancing the account of nature's dealings, and regulating the expense of life. Extensive mischief is doubtless committed by that insidious little animal the *Teredo*, which recklessly wends its way in ten thousand tortuous paths, through the hardest oak, or toughest teak, rendering them like sponge, and destroying their texture as supports to submarine erections, occasioning, in certain localities, dangerous consequences; piles, jetties, piers, and vessels, long stationed in some climates, are subject to their ravages, from which fatal accidents have resulted. It is not in human nature thus to witness the destruction of the noblest works of our ingenuity, without condemning the agents that have effected it; but these are no more than additional illustrations of the fact, that it is for man's ultimate benefit such occurrences should take place—they give a stimulus to his industry—set his wits to work—teach him to counteract the evil committed against his immediate interest or convenience and often create a far greater eventual benefit than he could at first sight discover. The wise man only becomes so by not despising the humblest information he is constantly examining, inquiring, or reasoning on everything around him; and some of the greatest efforts of genius have been perfected from the indications furnished from apparently trivial causes, overlooked at first from their insignificance. Another of the number of shells but little loved by mariners, is the *Balanus* or *Barnacle*, whose numerous broods spread themselves in thick congregations, sometimes as it were incrusting the bottoms of ships, and their sides below the water mark, to such an extent, that their progress through the pathless sea becomes seriously impeded: the watchful sailor baffled in his best exertions, and the wealthy speculator disappointed in his nicely calculated hope of gain. To conclude our list of commonly called destructives in conchology, we shall add the *Pholas*, and other of the penetrating genera of shells, whose habitations are formed in the calcareous, and even stony matter, wood, &c., there performing either good or evil according to the particular circumstances of their situation and the purposes of their being, which are, if well considered, probably more beneficial than prejudicial to mankind.

WONDERFUL ESCAPE FROM INDIANS.

James Morgan, a native of Maryland, married at an early age, and soon after settled himself near Bryant's station, in the wilds of Kentucky. Like most pioneers of the west, he had cut down the cane, built a cabin, deadened the timber, enclosed a field with a worm fence, and planted some corn.

It was on the fifteenth day of August, 1782;—the sun had descended; a pleasant breeze was playing through the surrounding wood; the tall cane bowed under its influence, and the broad green leaves of the corn waved in the air; Morgan had seated himself in the door of his cabin, with his infant on his knee; his young and happy wife had laid aside her spinning-wheel, and was busily engaged in preparing the frugal meal. That afternoon Morgan had accidentally found a bundle of letters, which he had finished reading to his wife before he had taken his seat in the door. It was a correspondence in which they had acknowledged an early and ardent attachment for each other, and the perusal left evident traces of joy on the countenance of both; the little infant, too, seemed to partake of its parents' feelings by its cherub smiles, its playful humour, and infantile caresses. While thus agreeably employed, the report of a rifle was heard, another, and another, followed in quick succession. Morgan sprang to his feet, his wife ran to the door, and they simultaneously exclaimed "Indians!"

The door was immediately barred, and the next moment all their fears were realized, by a bold and spirited attack of a small party of Indians. The cabin could not be successfully defended, and time was precious. Morgan, cool, brave, and prompt, soon decided. While he was in the act of concealing his wife under the floor, a mother's feelings overcame her—she arose—seized her infant, but was afraid that its cries would betray her place of concealment. She hesitated—gazed silently upon it—a momentary struggle between affection and duty took place. She once more pressed her child to her agitated bosom; again and again kissed it with impassioned tenderness. The infant, alarmed at the profusion of tears that fell upon its cheek, looked up in its mother's face, threw its little arms around her neck, and wept aloud. "In the name of Heaven, Eliza, release the child, or we shall be lost," said the distracted husband, in a soft imploring tone of voice, as he forced the infant from his wife; hastily took up his gun, knife and hatchet; ran up the ladder that led to the garret, and drew it after him. In a moment the door was burst open, and the savages entered.

By this time, Morgan had secured his child in a bag, and lashed it to his back; then throwing off some clapboards from the roof of his cabin, resolutely leaped to the ground. He was instantly assailed by two Indians. As the first approached, he knocked him down with the butt end of his gun. The other advanced with uplifted tomahawk; Morgan let fall his gun and "closed in." The savage made a blow—missed aim, but severed the cord that bound the infant on his back, and it fell. The contest over the child now became warm and fierce, and was carried on with knives only. The robust and athletick Morgan at length got the ascendency. Both were badly cut, and bled freely, but the stabs of the white man were better aimed and deeper, and the savage soon sunk to the earth in death. Morgan hastily took up his child and gun, and hurried off.

The Indians in the house, busily engaged in drinking and plundering, were not apprized of the contest in the yard, until the one that had been knocked down gave signs of returning life, and called them to the scene of action. Morgan was discovered, immediately pursued, and a dog put on his trail. Operated upon by all the feelings of a husband and a father, he moved on with the speed of a hunted stag, and soon outstripped the Indians, but the dog kept in close pursuit. Finding it impossible to outrun or elude the cunning animal, trained to hunts of this kind, he halted and waited until it came within a few yards of him, fired and brought him down—reloaded his gun, and again pushed forward. In a short time he reached the house of his brother, who resided between Bryant's station and Lexington, where he left the child, and the two brothers immediately set out for his dwelling. As they approached the clearing, a light broke upon his view—his speed quickened, his fears increased, and the most agonizing apprehensions crowded upon his mind. He emerged from the cane-brake—beheld his house in flames, and almost burnt to the ground. "My Wife!" he exclaimed, as he pressed one hand to his forehead, and grasped the fence with the other, to support his tottering frame. He gazed for some time on the ruin and desolation before him, advanced a few steps, and sunk exhausted to the earth.

Morning came—the bright luminary of Heaven arose—and still found him seated near the almost expiring embers. In his right hand he held a small stick, with which he was tracing the name of "ELIZA," on the ground—his left was thrown over his favourite dog, that lay by his side, looking first on the ruin, and then on his master, with evident signs of grief. Morgan arose. The two brothers now made a search, and found some bones almost burned to ashes, which they carefully gathered, and silently consigned to their mother earth, beneath the wide-spread branches of a venerable oak, consecrated by the purest and holiest recollections.

Several days after this, Morgan was engaged in a desperate battle at the lower Blue Licks. The Indians came off victors, and the surviving whites retreated across the Licking, but were pursued by the enemy for a distance of six-and-thirty miles.

James Morgan was among the last that crossed the river, and was in the rear until the hill was descended. As soon as he beheld the Indians reappear on the ridge, he felt anew his wrongs, and recollected the lovely object of his early affections. He urged on his horse and pressed to the front. While in the act of leaping from his saddle, he received a rifle ball in his thigh, and fell; an Indian sprang upon him, seized him by the hair, and applied the scalping-knife. At this moment Morgan cast his eyes upward and recognized the handkerchief that bound the head of the savage, and which he knew to be his wife's. This added renewed strength to his body, and increased activity to his fury. He quickly threw his left arm around the Indian, and with a death-like grasp, hugged him to his bosom, plunged his knife into his side, and he expired in his arms. Releasing himself from the savage, Morgan crawled under a small oak, on an elevated piece of ground, a short distance from him. The sce of action shifted, and he remained undiscovered a unscalped, an anxious spectator of the battle.

It was now midnight. The savage band after king all the scalps they could find, left the batt ground. Morgan was seated at the foot of the oa its trunk supported its head. The rugged and u even ground that surrounded him was covered wi the slain; the once white and projecting rocl bleached with the rain and sun of centuries, we crimsoned with the blood that had warmed the he and animated the bosom of the patriot and the s dier. The pale glimmering of the moon, occasio ally threw a faint light upon the mangled bodies the dead, then a passing cloud enveloped all in dar ness, and gave additional horror to the feeble cri of a few still lingering in the last agonies of protra ed death, rendered doubly appalling the coarse gro of the bear, the loud howl of the wolf, the shrill a varied notes of the wildcat, and the panther, feedi on the dead and dying. Morgan beheld the sce with heart-rending sensations, and looked forwa with the apathy of despair, to his own end.

A large and ferocious looking bear, covered wi blood, now approached him; he threw himself the ground—silently commended his soul to Heav and in breathless anxiety awaited his fate. T satiated animal slowly passed on without notici him. Morgan raised his head—was about offeri thanks for his unexpected preservation, when t cry of a pack of wolves opened upon him, and aga awakened him to a sense of his danger. He plac his hands over his eyes—fell on his face, and silent agony awaited his fate. He now heard rustling in the bushes—steps approached—a cc chill ran over him.—Imagination—creative, bu imagination, was actively employed; death—t most horrible death, awaited him—his limbs wou in all probability, be torn from his body, and he devoured alive. He felt a touch—the vital spa was almost extinguished—another touch, more vi lent than the first, and he was turned over—t cold sweat ran down in torrents—his hands were olently forced from his face—the moon passed fro under a cloud—a faint ray beamed upon him—h eyes involuntarily opened and he beheld his *wi* who, in scarce audible voice, exclamed "*My hu band!—my husband!*" and fell upon his bosom.

Morgan now learned from his wife, that after t Indians had entered the house, they found sor spirits and drank freely; an altercation soon to place—one of them received a mortal stab and fel his blood ran through the floor on her. Believing to be the blood of her husband, she shrieked alo and betrayed her place of concealment. She w immediately taken and bound. The party, af setting fire to the house, proceeded to Bryant's st tion. On the day of the battle of the Blue Lick a horse, with saddle and bridle, rushed by her, whi she knew to be her husband's. During the actic the prisoners were left unguarded—made their e cape, and lay concealed beneath some bushes und the the bank of the river. After the Indians h returned from the pursuit, and left the battle-grour she, with some other persons that had escaped wi her, determined to make a search for their frienc and if on the field, and living, to save them if pos ble from the beasts of prey. After searching some time, and almost despairing of success, she fortunately discovered him.

The party of Colonel Logan found Morgan and his wife, and restored them to their FRIENDS, their INFANT, and their HOME.

ARTS AND ARTISTS.

TENIERS, THE YOUNGER.

The Flemish school has two painters of this name, both of them of remarkable talent, both of them sirnamed David, and distinguished by the terms *elder*, and *younger*. The latter was born at Antwerp, in 1610, and naturally received his first instruction in painting in his father's studio. After this, by some he is said to have taken lessons of Rubens; others maintain that he derived all his information from his father alone. Be this as it may, he soon discovered great talent for imitation, and he presented admirable sketches after Bassano, Paul Veronese, Tintoretto, and Rubens, which were considered by many connoisseurs as coming from the hands of those masters. Happily, however, Teniers soon found that he must do something more than imitate. He had already given one remarkable proof that he was worthy of having nature for his model; for finding himself one day in a tavern, and without the means of paying for his bill, he called to him a blind musician, painted him on the spot, and sold his picture for three ducats to a traveller who came up at the time. This picture displayed so much talent, that it was long regarded by connoisseurs as his *chef d'œuvre.*

In his new career, Teniers soon found fame and fortune. Leopold made him gentleman of his bedchamber: queen Christina gave him her miniature to which was attached a gold chain; and the king of Spain, the prince of Orange and other distinguished individuals granted him their protection. Louis XIV., however, did not appreciate the merit of Teniers. One day when one of Teniers' Flemish pictures were placed in the cabinet of this monarch, he exclaimed "remove those daubs."

Independent of his talents, the mildness of Teniers' manners, his regularity of conduct, and his conversational powers attracted many to him. Finding that his numerous visitors interfered with his avocations, he left his native city and went to Pesth between Malines and Antwerp, in order to devote himself more closely to his studies. This country retreat soon became, to his great regret, the rendezvous of all the nobility in the country. Teniers, however, was enabled to mix with the peasantry, to observe their manners, their dances, games, and contests, which he transferred with surprising truth to

[The Smokers, after Teniers, the Younger.]

the canvass, always preserving, however, the dignity of rank and talent.

The drawing of Teniers is extremely correct. Possessed of great rapidity of execution, he seldom devoted more than a day to his finest works, and he often said laughingly, that it would require a gallery two leagues long to contain his works.

Teniers died at Brussels at the age of eighty-four years. He had a brother named Abraham, who was also a pupil of the elder Teniers, but he did not excel

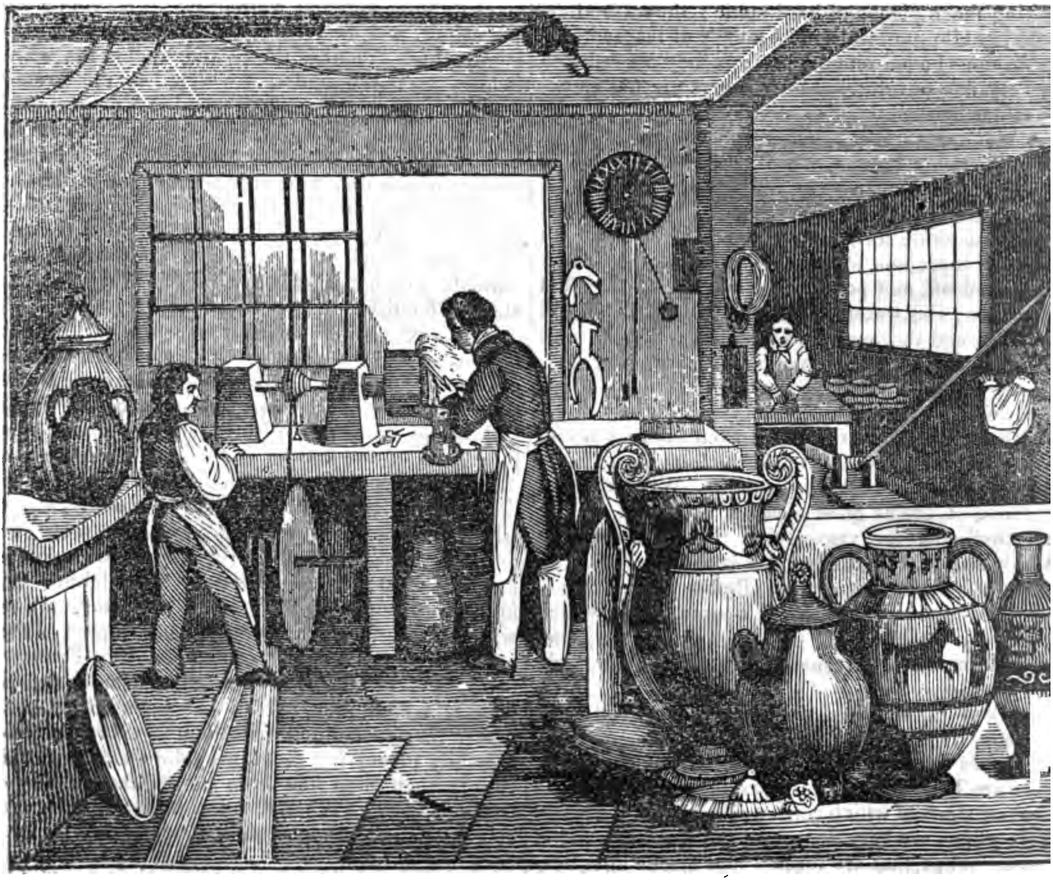
USEFUL ARTS.

PORCELAIN.

Porcelain is a peculiar species of earthenware, chiefly manufactured in China, and thence called *China-ware*. All earthenwares which are white and semi-transparent are generally called *porcelains*; but among these, such great differences may be observed that, notwithstanding the similarity of their external appearance, they cannot be considered as matters of the same kind. These differences are so evident, that even persons who are not connoisseurs in this respect prefer the porcelain of some countries to that of others.

The art of making porcelain is one of thos which Europe has been excelled by oriental nati The first porcelain that was seen in Europe brought from Japan and China. The whiten transparency, fineness, neatness, elegance, and e the magnificence of this pottery, which soon bec the ornament of sumptuous tables, did not fail to cite the admiration and industry of Europeans; their attempts have succeeded so well that in dif ent parts of Europe, earthenwares have been m so like the oriental that they have acquired the na of *porcelain*. The first European porcelains w made in Saxony and in France, and afterward England, Germany, and Italy; but, as all these w different from the Japanese, so each of them had peculiar character.

The finest and best porcelain of China is mad a village called *King-te-tching*, in the province Kiang-si. This celebrated village is a league ar half in length, and it has been stated that it conta a million of inhabitants. The emperor Kang-hi desirous of having some made under his own insp tion at Pekin. For this purpose he collected w men, together with tools and all materials necessa furnaces were also erected, but the attempt mis ried. The village of King-te-tching still contin the most celebrated place in the empire for bea porcelain, which is transported to all parts of world, and even to Japan.



[The Workshop of a Moulder and Turner of Porcelain.]

We are unable to discover who first found out the art of making porcelain, nor is it known whether the Chinese were indebted to chance for it, or to the repeated efforts of inventive genius; we cannot even determine its antiquity with precision; we know only from the annals of Feou-leang, a city in the district to which King-te-tching belongs, that, since the year 442 of our era, the workmen of this village have always furnished the emperors with porcelain; and that one or two mandarins were sent from court to inspect their labours. It is, however, supposed that the invention of porcelain is much older than that epocha.

We are indebted to father d'Entrecolles, a missionary of the church of Rome, for a very accurate account of the manner in which porcelain is made in China. We shall therefore give his account of the Chinese manner of making it, as abridged by Grosier in his "general description of China." The principal ingredients of the fine porcelain are *pe-tun-tse* and *kao-lin*, two kinds of earth from the mixture of which the paste is produced. The kao-lin is intermixed with small shining particles; the other is purely white, and very fine to the touch. These first materials are carried to the manufactories in the shape of bricks. The pe-tun-tse, which is so fine, is nothing else but fragments of rock taken from certain quarries and reduced to powder. Every kind of stone is not fit for this purpose. The colour of that which is good, say the Chinese, ought to incline a little towards green. A large iron club is used for breaking these pieces of hard stone; they are afterwards put into mortars, and by means of levers headed with stone bound round with iron, they are reduced to a very fine powder. These levers are put in action either by the labour of men, or by water, in the same manner as the hammers of our paper-mills. The pulverised mass being afterwards collected is thrown into a large vessel full of water, which is rapidly stirred with an iron shovel. When it has been left to settle for some time, a kind of cream rises on the top, about four inches in thickness, which is skimmed off, and poured into another vessel filled with water; the water in the first vessel is stirred repeatedly and the semi-fluid material collected, until nothing remains but the coarse dregs, which by their own weight precipitate to the bottom; these dregs are carefully collected and pounded anew.

With regard to what is taken from the first vessel it is suffered to remain in the second until it is formed into a kind of crust at the bottom. When the water above it seems quite clear, it is poured off by gently inclining the vessel, that the sediment may not be disturbed; and the paste is thrown into large moulds proper for drying it. Before it is entirely hard, it is divided into small square cakes, which are sold by the hundred. The colour of this paste, and its form, have occasioned it to receive the name of pe-tun-tse.

The kao-lin, which is used in the composition of porcelain, requires less labour than the pe-tun-tse. Nature has a greater share in the preparation of it. There are large mines of it in certain mountains, the exteriour strata of which consist of a kind of red earth. These mines are very deep, and the kao-lin is found in small lumps, that are formed into bricks after having gone through the same process as the pe-tun-tse

The Chinese have lately discovered a new substance proper to be employed in the composition of porcelain. It is a stone, or rather species of chalk, called *hoa-che*, from which the physicians prepare a kind of draught that is said to be detersive, aperient, and cooling. The manufacturers of porcelain have thought proper to employ this stone instead of kao-lin. It is called hoa, because it is glutinous, and has a great resemblance to soap. Porcelain made with hoa-che is very rare, and much dearer than any other. It has an exceedingly fine grain; and with regard to the painting, if it be compared with that of the common porcelain, it appears to surpass it as much as the most elaborate miniature does a common oil painting. This porcelain is besides so light that it surprises those who are accustomed to handle other kinds; it is also much more brittle.

When hoa-che is taken from the mine it is washed in rain or river water, to separate it from a kind of yellow earth that adheres to it. It is then pounded, put into a tub filled with water to dissolve it, and afterwards formed into cakes like kao-lin. We are assured that hoa-che, when prepared in this manner, without the mixture of any other earth, is alone sufficient to make porcelain. It serves instead of kao-lin, but it is much dearer. Kao-lin costs only tenpence per-pound; the price of hoa-che is half a crown; this difference, therefore, greatly enhances the value of porcelain made with the latter.

To pe-tun-tse and kao-lin, the two principal elements, must be added the varnish from which it derives its splendour and whiteness. This is of a whitish colour, and is procured from the same kind of stone which produces the pe-tun-tse, but the whitest is always chosen, and that which has the greenest spots. The stone is first washed and pulverised; it is then thrown into water, and after it has been purified it throws up a kind of cream. To one hundred pounds of this cream is added one pound of che-kao, a mineral something like alum, which is put into the fire till it becomes red hot and is then pounded. This mineral gives a degree of consistence to the varnish, which is however carefully preserved in its state of fluidity.

The next process consists in again purifying the pe-tun-tse and the kao-lin. The workmen then proceed to mix these two substances together. For fine porcelain they put an equal quantity of the kao-lin and the pe-tun-tse; for the middling sort they use four parts of the kao-lin and six of the pe-tun-tse. The least quantity put of the former is one part to three of the pe-tun-tse. When this mixture is finished, the mass is thrown into a large pit, well paved and cemented in every part; it is then trod upon, and kneaded until it becomes hard. This labour is so much the more fatiguing as it must be continued without intermission: were it interrupted all the other labourers would be unemployed. From this mass, thus prepared, the workmen detach different pieces, which they spread out upon large slates, where they knead and roll them in every direction, carefully preserving them in a solid state, and taking care to keep them free from the mixture of any extraneous body. When this paste has not been properly prepared, the porcelain cracks, and melts or becomes warped.

After a piece of porcelain has been properly formed it passes into the hands of the painters. The hoapei, or painters in porcelain, are equally indigent with the other workmen; they follow no certain plan in their art, nor are they acquainted with any of the rules of drawing; all their knowledge is the effect of practice, assisted frequently by a whimsical imagination. Some of them, however, show no inconsiderable share of taste in painting flowers, animals, and landscapes, on porcelain, as well as upon the paper of fans, and the silk used for filling up the squares of lanterns. The labour of painting in the manufactories of which we have spoken is divided among a great number of hands. The business of one is entirely confined to tracing out the first coloured circle which ornaments the brims of the vessel; another designs the flowers, and a third paints them; one delineates waters and mountains, and another birds and other animals: human figures are generally the worst executed.

The tsou-you is a kind of varnish procured from white flint, which has the peculiar property of making those pieces of porcelain upon which it is laid appear to be covered with an infinitude of veins in every direction; at a distance they would be taken for cracked vases, the fragments of which have not been displaced. The colour communicated by this varnish is a white, somewhat inclining to that of ashes. If it be laid upon porcelain, entirely of an azure blue, it will appear in the same manner to be variegated with beautiful veins. This kind of porcelain is called *tsoui-ki*.

The Chinese make vases ornamented with a kind of fret-work, perforated in such a manner as to resemble very fine lace. In the middle is placed a cup proper for holding any liquid; and this cup makes only one body with the former, which appears like lace wrapped round it. The Chinese workmen had formerly the secret of making a still more singular kind of porcelain; they painted upon the sides of the vessel fishes, insects, and other animals, which could not be perceived until it was filled with water. This secret is in a great measure lost: the following part of the process is, however, preserved. The porcelain which the workman intends to paint in this manner must be extremely thin and delicate. When it is dry the colour is laid on pretty thick, not on the outside, as is generally done, but on the inside. The figures painted upon it for the most part are fishes, as being more analogous to the water with which the vessel is filled. When the colour is thoroughly dry, it is coated over with a kind of glaze, made from porcelain-earth, so that the azure is entirely enclosed between two laminæ of earth. When the glaze becomes dry, the workman pours some varnish into the vesssel, and afterward puts it upon a mould and applies it to the lathe. As this piece of porcelain has received its consistence and body within, it is made as thin on the outside as possible, without penetrating to the colour; its exteriour surface is then dipped in varnish, and when dry it is baked in a common furnace. The art of making these vases requires the most delicate care and a dexterity which the Chinese perhaps do not at present possess. They have, however, from time to time made several attempts to revive the secret of this magick painting, but their suceess has been very imperfect. This kind of porcelain is known by the name of *kia-tsing*, "pressed azure."

After the porcelain has received its proper form,
its colours, and all the intended or
transported from the manufactory t
which is situated at the other end of
King-te-tching.

The small pieces of porcelain, suc
are enclosed in cases about four incl
Each piece is placed upon a saucer
twice as thick as a crown piece, and e
to its bottom. These small cases are
over with the dust of the kao-lin. W
are large, the porcelain is not placed
because it would be too far removed
and consequently from the action of th

These piles of cases are put into th
placed upon a bed of coarse sand,
thickness: those which occupy the
are at least seven feet high. The tw
are at the bottom of each pile remain
the fire acts too feebly upon them, an
are partly covered by the sand. For
son, the case placed at the top of eac
suffered to be empty. The piles whi
finest porcelain are placed in the mid
furnace; the coarsest are put at its fu
ty; and those pieces which have the
the strongest colouring are near its m

These different piles are placed
the furnace; they support each othe
pieces of earth, which bind them at th
and middle, but in such a manner th
sage is left for the flame to pass every
them.

Before each of these furnaces for
lain there is a long porch, which co
supplies in certain respects the place
It serves for the same purposes as t
glass-house. "These furnaces," says
trecolles, "which were formerly onl
height and the same in length, are co
upon a much larger plan; they are ne
oms in height and four in breadth;
and roof are so thick that one may lay
on them without being incommoded
The dome or roof is shaped like a fun
large aperture at the top, through wh
flame and smoke incessantly issue.
principal aperture, there are five o
which are covered with broken pots,
manner that the workman can increas
the heat according as it may be found
ient: through these also he is enable
when the porcelain is sufficiently ba
uncovered that hole which is nearest
aperture, he takes a pair of pincers a
of the cases: if he observes a bright f
nace, if all the cases are red-hot, and
of the porcelain appear with full lust
that it is in a proper state; he then dis
fire, and entirely closes up the mouth
for some time. In the bottom of the
is a deep hearth about two feet in
which a plank is laid, in order that
may enter to arrange the porcelain.
is kindled on this hearth, the mouth o
is immediately closed up, and an ap
sufficient for the admission of fagots a
length, but very narrow. The furnac
ed for a day and a night, after which

continually throwing wood into it, and relieve each other by turns. One hundred and eighty loads are generally consumed for one baking. As the porcelain is burning hot, the workman employs for the purpose of taking it out long scarfs, or pieces of cloth which are suspended from the neck."

The Chinese divide their porcelain into several classes, according to its different degrees of fineness and beauty. The whole of the first is reserved for the emperour. It is much to be doubted whether any of the largest and and finest porcelain of China has ever been brought to Europe; the missionaries at least assure us that none of that kind is sold at Canton. The Chinese set some value upon the Dresden porcelain, and still more upon that which comes from the manufactories of France.

CLOVES.

For the clove, we are principally indebted to the island of Amboyna. This island, which is situated near the western point of Ceram, is called by the Malays *Ambun*, which word signifies dew.

The botanical name of the tree which produces the clove is *Caryophyllus aromaticus;* its bark is thin and smooth like that of the beech, and its trunk, which is composed of an extremely hard wood, does not rise above five feet in height, but divides itself into several principal branches, the boughs of which are covered with leaves and flowers in the month of March. The leaves are placed opposite to each other, are of a dull green colour, smooth, and resemble in form and consistency those of the laurel; when bruised, they diffuse a strongly aromatick odour. The flowers, which grow at the ends of the branches, are disposed in bunches, and are formed of a long calyx, divided into four segments, and a corolla, consisting of four roundish notched petals of a very pale blue colour. This same calyx, gathered before the unfolding of the petals, is, properly speaking, the clove, the gathering of which is the principal object of the cultivation of the clove-tree: this business begins in October, and ends in February, at which time the cloves have acquired a reddish colour, and a certain degree of firmness. Large cloths are spread under the tree to receive the blossoms, which are brought down by strongly shaking the branches, or by the use of long reeds. They require to be dried quickly, but are first immersed in boiling water; this is said to be done in order to prevent injury from worms, but more likely it is in order to increase the weight. After this they are spread upon hurdles, covered with leaves, and exposed for a few days to smoke and a strong heat. This fumigation is followed by drying the cloves in the sun, and it is considered as a proof of the moisture being sufficiently evaporated when, upon raising the outward petals with the nail, the inside displays a bright red colour. The clove, to be in perfection, must be full-sized, heavy, oily, and easily broken; of a fine smell, and a hot aromatick taste, so as almost to burn the throat: it should make the fingers smart when handled, and leave a greasy moisture upon them when pressed. The upper part, that is the corolla, should be of rather a lighter brown than the calyx, and should be easy to separate from it. The best variety of the Amboyna cloves is called the royal clove, by way of distinction; it is smaller and blacker than the other varieties, and is very scarce.

From the unopened flowers is distilled an aromatick oil, formerly much in repute. The best is brought from Amboyna in bottles, but a considerable quantity is drawn off in this country.

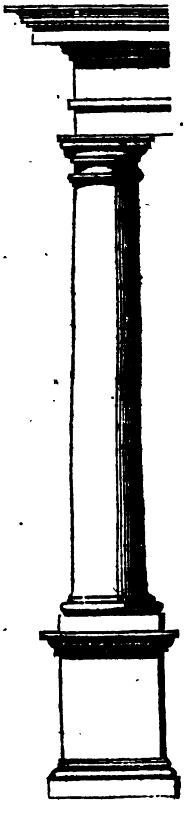
The clove-tree requires a rich and fertile soil; it is requisite that every weed and shrub in its immediate neighbourhood should be carefully removed, which practice has given rise to the idea which some travellers have entertained, that it attracts to itself all the nourishment of the soil in which it grows. The tree, if left to its natural growth, would rise to a considerable height, but a low stem sending off branches at its origin is preferred, for the facility of gathering the fruit.

The cloves which have been left upon the tree produce a fruit of an oval form, and about half an inch in diameter, containing a single kernel. This is called the mother clove, and is made into a sweetmeat by the Dutch. It is by this berry also that the tree is propagated; if put into the ground immediately upon being gathered, it produces the clove-tree, and flowers at the end of eight or nine years. Each tree yields annually on an average upward of two pounds of cloves, and continues to bear flowers for a hundred years. It is the custom with the natives of Amboyna to plant one of these trees upon the birth of a child, in order, by a rough calculation, to know its age; and these the Dutch did not dare to extirpate for fear of an insurrection, when they made their annual progress of devastation through the Moluccas.

ARCHITECTURE.

This beautiful and important branch of the fine arts, combines within itself painting, sculpture, building, and some of the higher portions of mathematical science. Michael Angelo Buonarotti, the great founder of modern architecture, possessed these attainments in a very eminent degree, and was consequently enabled to leave to posterity a monument of his art, unequalled by any but that of the celebrated Sir Christopher Wren. And if we go back to a still earlier period, we shall find that most of the great edifices of antiquity required as intimate an acquaintance with the exact sciences, as with the merely ornamental branches of design. Of the paramount importance of architecture little need be said whether we consider it, as some have done, as a mechanical science, sheltering beneath its ample wing the several employments of masons, carpenters, smiths, and all those artizans whom modern refinement has rendered necessary for the enjoyment of life, or as a fine art, exercising the highest powers of the human mind, and becoming the parent and preserver of painting and sculpture, whose very existence may be said to depend upon it.

We may now take the subject of architecture somewhat more in detail, and in accordance with our plan, proceed to examine the various "orders," as they are called, commencing with the Tuscan.



[Tuscan Order.]

The Tuscan order, as an antique, exists only in the works of Vitruvius, the description in which, being very obscure, has left a wide field for the ingenuity of modern architects. Among these Palladio, composed two profiles; one from the description of the ancient master, anc
to his own idea of a simplifi
That of Vignola, however, ha
approved and adopted.

The base of this order cons
with its fillet; it is, as are in
man orders, accompanied by a

The proportions, from Sir
follow: the column, fourteen r
ture, three modules, fifteen min
the base occupies one module;
the astragal, which divides
twelve modules, and the capita
the architrave, (including the
utes and a half; the frieze, the
nice, forty-two minutes.

The intercolumniations, in a
the Dorick, are the same; viz.
is most common and beautiful,
minutes; the diastyle, six mod
style, seven modules.

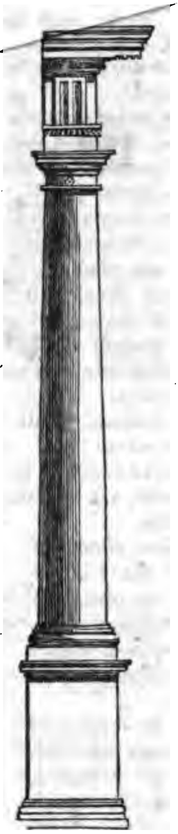
The Tuscan order admits of no ornaments, nor flutes in the columns; but rustick cinctures are sometimes represented on the shaft, an example of which occurs in the accompanying illustration, *fig.* 1.

This order may be employed in most cases, where strength and simplicity are required, rather than magnificence; such as prisons, market-places, arsenals; and the inferiour parts of large buildings.

The Dorick Order. We now come to an order, of which numerous ancient examples exists, and which will, in consequence, furnish us with more materials for description than the preceding. It is represented at *fig.* 2.
Dorick order is thus described b

"Dorus, son, of Hellen and
reigned over Achaia and Pelop
a temple of this order, on a spo
Argos, an ancient city. Many
were afterward raised in the oth
though at that time its proportion
ly established." This account,
and is now generally rejected.

From theory, however, we m
fact and description, and will
Dorick of the Greeks, referred to
nevertheless confounds this with
ly executed at Rome in his time
fect example is the order of the
ple of Minerva, in the Acropolis
under the administration of P
about four hundred and fifty yea
tian era. We cannot do better t
sions of this singularly fine speci
(including the capital,) ten mo
minutes and a half; the whole
modules, twenty-seven minutes
the capital, twenty-seven minute
ters; the architrave, (with its
twelve minutes and three quar



[Dorick Order.]

the square member of the corona, one module, nineteen minutes; and the cornice, twenty-six minutes. Diameter of the column at the top, one module, sixteen minutes.

To proceed to the order designated by this title by the Romans. Very few ancient examples of this variation exist. The most perfect is that of the theatre of Marcellus, if, perhaps, we except that misshapened pile, Trajan's column, which is generally pronounced to be Tuscan. It is, therefore, principally indebted for its existence to the modern Italian architects, who, having little of antiquity before their eyes appear to have bestowed more attention upon this order than the others, and it must be confessed that they have made of it a very elegant design, though, as before observed, essentially different from the original and true Dorick. The measures, from Sir William Chambers, are as follow: the base, thirty minutes; the shaft, thirteen modules, twenty-eight minutes; and the capital, thirty-two minutes; the architrave, thirty minutes; the frieze to capital of triglyph, forty-five minutes; and cornice, forty-five minutes. Upper diameter of column, fifty minutes.

In no example of antiquity is the Dorick column provided with a base. This circumstance has occasioned no small perplexity to some of those fanciful writers, who seek in every point some analogy to the human figure, or the trunk of a tree. Vitruvius, indeed, has told them that the base is a *shoe*, first invented to cover the nakedness of the matronly prototype of the Ionick order. "But," says Monsieur Le Clerc, "I must own I cannot consider a column without a base, comparing it to a man, but I am, at the same time struck with the idea of a person without feet, rather than without shoes; for which reason I am inclined to believe, either that the architects had not yet thought of employing bases to their columns, or that they omitted them in order to leave the pavement clear, the angles and projection of bases being stumbling-blocks to passengers, and so much the more troublesome, as the architects of those times frequently placed their columns very near each other, so that, had they been made with bases, the passages between them would have been extremely narrow and inconvenient. Accordingly, to supply this defect, as it was considered in this order, most architects have employed the *attick base*, which is common to all the orders except the Tuscan though belonging, perhaps more peculiarly to the Ionick.

It consists of two tori, with a scotia and fillets between the upper of which, in this version, resembles an inverted ovolo. The fillet above the upper torus is always connected with the shaft by a curve, as is also that under the capital, for which reason they are commonly considered as part of the shaft. The *plinth*, or square member beneath, is usually understood, in Roman architecture, as an indispensable appendage to the base, though Palladio has omitted it in his Corinthian order; but it is rarely found in the Greek specimens. To save this order, however, from the sad humiliation of being obliged to borrow a shoe when required to wear one, Vignola provided it with this appendage. His base consists of one large torus with one considerably smaller resting upon it, surmounted by the fillet.

M. Le Clerc has, however, we apprehend, discovered the true reason why, at least in the latter Greek specimens, the base is omitted; namely, the very narrow intercolumniations. In the Greek order alteration is not probable, and perhaps not desirable; but in the Roman, where this addition has been long provided for us, and the intercolumniations adjusted accordingly, the omission would be certainly improper.

The most striking peculiarity in this order is the *triglyph*, (supposed by Vitruvius to be the end of the joists laid transversely on the beam of the architrave,) which forms the technical distinction between the Grecian and Roman Dorick, being in the former always placed at the corner of the entablature, and in the latter, invariably over the centre of the column. This circumstance is a corroboration of the objection against the notion of the timber prototype; for, following the idea of the Egyptian origin of Greek architecture, there is found in the large hollowed crown moulding of the temple of Tentyris, a decoration very similar to the Dorick triglyph, the extreme parts of which are placed at the angle, like the Greek Dorick, but which, from their situation, bear not the least resemblance to the ends of pieces of wood. The triglyph is surmounted by the mutule, in the Greek, and in some Roman examples inclined, but in most modern profiles horizontal: on its soffit are represented guttæ, or drops. The spaces between the triglyphs on the frieze, are called metopes, which, in the modern Dorick, are invariably perfectly square, and generally enriched with sculptures. Those which formerly adorned the metopes of the Parthenon were brought to England by Lord Elgin, and now form the principal part of the collection which is known by his name at the British museum. In the modern order these sculptures are most commonly an alternate bull's scull, and patera. The extreme projections of all these ornaments should be less than that of the triglyph itself, thus keeping a due subordination between mere decorations and essential parts. All the Grecian Dorick columns are fluted, and in both Greek and Roman this is performed without fillets between, as in the other orders. The intercolumniations in this order differ from those of the others, on account of the triglyph, the metopes being required to be exactly square. They are as follow: the coupled columns of course must stand under adjoining triglyphs; this makes their distance, at the foot of the shaft, twenty-one minutes. The next intercolumniation is the monotriglyph, having *one* between the columns; the distance is three modules. The diastyle—two triglyphs, five modules and a half. The aræosistile, which has three between, eight modules.

(To be continued.)

POPULAR MEDICAL OBSERVATIONS.

DISINFECTING AND PURIFYING AGENTS.

The antiseptick, and consequent preservative, disinfecting, and purifying properties of the chlorides of soda and of lime, render them highly important agents in the preservation of health, and applicable in various ways to the promotion of publick and domestick comfort. It is principally, however, in the preservation and promotion of publick hygeine, that these salts become in the highest degree valuable, by decomposing putrid miasmata of every kind, and preventing the generation of epidemick diseases, or arresting their progress when they already exist. They are effectual in destroying the poisonous exhalations from privies, sewers, docks, or ponds left bare at low water; the putrid materials accidentally admitted, or incautiously allowed to accumulate in vaults and cellars, store-houses, &c.: for disinfecting hospitals, prisons, market-houses, gutters—for purifying the air of wells, mines, the rooms where silk-worms are reared, the manufactories of glue, starch, catgut, &c.; slaughter-houses, drains, stables, the holds of vessels, amphitheatres, churches, theatres, hospitals, infirmaries, the rooms of the sick, &c.: for the preservation of dead bodies previous to burial, or for removing the fetor and injurious exhalations from bodies that have been disinterred for the purpose of judicial investigation; for washing the linen and bedding of the sick; for destroying the fetid emanations from filthy clothes, and disinfecting the stores and ware-rooms where secondhand clothing and rags are kept.

The chloride of soda, which is liquid, is rather more expensive, but more powerful than the chloride of lime, which is in the form of a white powder; and hence the former is applicable to disinfecting and purifying operations on a small scale. They are both used, mixed with more or less water, according to the intention in view. If a body is to be preserved before burial, add about a pint of the concentrated chloride of soda to a bucket full of water, and cover the body with a sheet dipped in this solution, which must be sprinkled oc
corpse. Or if the chloride of
make a mixture of about a poun
with two buckets full of water, a
fore.

For vaults, cellars, &c. take t
chloride of lime to three or four p
sprinkle from time to time, by mea
pot.

The solution should be thrown
privy—or into a well, the foul air
sirable to neutralize.

To preserve the health of work
common sewers, a pound of the
should be dissolved in three bucke
and a bucket full of the solution s
by the side of the workmen, to be e
in washing their hands and arms,
their nostrils, and for sprinkling on

For ships, take a spoonful or mor
ride, add it to a bottle of water, and
lution freely in every part of the ho
decks.

For purifying offensive water, n
chloride of lime in the proportion
ounces of the latter, to about sixty
the former. After being thus disinfe
must be exposed to the air, and allow
some time, when it becomes fit to dri

In domestick economy, the chlorid
for the preservation in summer, of eg
poultry, and other articles of alime
vegetables which are kept during win
pleasant odour they frequently acqui
to disinfect spoiled meat, fish, &c.
eggs they are to be put into a solutio
of the chloride of lime in thirty-two p
their place being occasionally change
may be preserved sweet by wrapping
wet with a weak mixture of the chl
and water. To deprive vegetables an
disagreeable smell or taste they may h
they are to be immersed several times
taining one-fortieth or one-sixtieth par
of soda, and then well washed in pure

The manner of disinfecting articles
putridity, is by using a mixture of th
parts of water to one of chloride, and
them in pieces of linen or cotton soake
lution, or by sprinkling them freely, and
tervals with it. By these means th
odour and poisonous exhalations given o
matters are promptly destroyed, and
which may result from them is entirely

The chlorides of lime and of soda m
cured of all our principal apothecaries;
attendant upon their free use is so trifling
them within the reach of almost every
As a means of removing the sources of
cities and villages, these salts demand t
of those who are constituted by law th
of publick health.

THE SUMMER, OR BOWEL-COMPLAINT OF

The chief causes of the summer or
plaint of children, to which so many a
victims, are heated and impure air, and
regard to diet; hence the disease is al

confined to large and crowded cities, and is most prevalent among the children of the poorer classes, who inhabit narrow and confined streets, courts, and alleys—who are badly nursed, and have not a sufficient attention paid to the cleanliness of their persons and clothing. In the country it is seldom met with, excepting in the neighbourhood of marshes, or of low, wet, and otherwise unhealthy situations.

One of the most effectual means of preserving children from an attack of this complaint, is, therefore, to remove them from the heated and impure air of the city, to a healthy situation in the country, before the extreme heat of the summer commences. But, unfortunately, this change of situation cannot in every instance be effected; the circumstances of a large portion of the community being such, as necessarily to confine them, at all seasons, to the spot in which they happen to reside. Even when a removal from the city cannot be accomplished, though the chances of success are lessened, yet still much may be done toward the prevention of the disease. In such cases, the children should occupy, always, the largest and most airy room in the house; if possible, on the second floor. The room should be guarded from exposure to the direct rays of the sun, while a constant and free ventillation is kept up. The utmost cleanliness must also be observed in the room, as well as in the person and clothing of the children.

During the summer months, the daily use of the cold or tepid bath, while it insures the cleanliness of the skin, is a very powerful means of preventing this disease. It should not, therefore, be neglected, provided there is no circumstance connected with the health and constitution of the child to forbid its employment.

In clear weather, and in the cool of the day, children should be frequently carried abroad, in the most open and healthy parts of the neighbourhood; or, when the parents have it in their power, a considerable benefit will be derived from repeated rides in an open carriage, into the neighbouring country. Sailing for a few hours every day, is likewise an efficient means of enabling children to enjoy all the benefits of pure, fresh air; and which, in most of our large cities, by the numerous steamboats hourly passing to different situations in their neighbourhood, is placed within the reach of almost every parent.

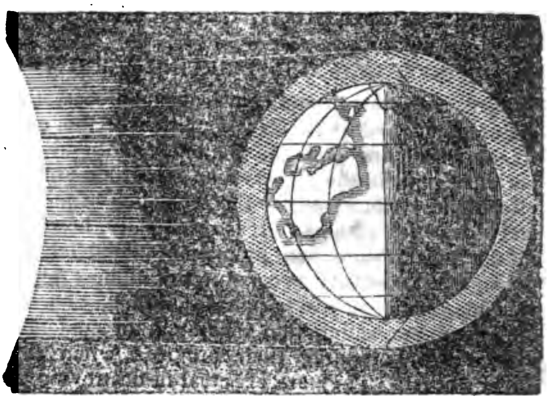
The clothing of children should be loose, and of a soft texture; and carefully accommodated to the state and changes of the weather, so as to preserve the body of an *even and moderate* temperature. As already remarked, cleanliness of the clothing as well as of the skin, is always indispensable to the health and comfort of children, and should, therefore, be sedulously attended to.

The breast milk of the mother is the proper and only natural food for an infant; "nature does not afford, nor can art supply, any effectual substitute for this fluid." To it, therefore, should children be almost entirely confined, if circumstances will allow of it, until the process of teething has made some progress. After weaning, their diet should consist of such simple articles as are nutritive, easy of digestion, and but little stimulating; all spices or seasoning, with the exception of salt, all sorts of kes and pastry, butter in every form, unripe and decayed fruit, and distilled or fermented liquors must be carefully avoided.

When the disease is present, many of the foregoing directions are equally important to insure its removal, as they are previously, in order to guard against its occurrence. The circumstance of their being, in general, so little attended to, is one cause of its very great fatality.

Parents should, in this, as in every other complaint of children, be upon their guard against the pretensions of empiricism. Let them be assured that no remedy can be devised capable of curing effectually the summer-complaint of children, unless the latter are removed from the influence of those causes by which the disease has been produced: when such removal is effected at a proper period, the lives of their children may in almost every instance be preserved.

ASTRONOMY



PHENOMENA OF DAY AND NIGHT.

THE most familiar of all the astronomical phenomena is the gradual and regular transitions of day to night. It must be obvious to all that day is produced by the presence of the sun's light, and night, by the absence of it. By Ptolemy, Tycho Brahe, and other celebrated ancients, it was believed that the sun, moon, planets, and whole host of stars, performed an eternal revolution round the earth, for the mere purpose of lighting us. Subsequently, however, it has been proved that the same effect is produced by the earth itself turning round, and thus exposing in succession every part of her surface to the genial beams of the sun, the placid light of the moon, and the twinkling lustre of the stars. Those ancient astronomers we have just mentioned, relied, for the most part, upon the evidence of their senses; while in modern times, astronomers have been guided by reason. The revolution of the earth, according to the modern theory, may be exemplified in the following familiar manner. While a ship is under sail, a person looking out of the cabin window will perceive the churches, trees, and houses, on the coast, moving rapidly in a contrary direction to that which his reason tells him he is sailing, though he is not himself sensibly conscious *he* is moving. Suppose, again, the ship to be the earth, and the churches, trees, and houses, the sun, moon, and stars, and you may then form some idea of the earth's revolving upon her axis, and leaving the heavenly bodies in the distance. As the earth is of a spheroidal shape, the rays of solar light cannot illuminate but one-half of its surface at one time. The dews of the morning are constantly descending upon those portions of the earth toward the east, which are merging into the sun's beams, so that they are gently moistened, and by that means sufficiently prepared to pass under and receive his midday heat at twelve o'clock. And by the motion of the earth round its axis, this portion of its surface is thus regularly but gently precipitating itself, from the rays of the noon-day sun, into the darkness of night.

AMERICAN COMMERCE OF 1836.

The gross amount in value of imports, within the year, ending on the thirtieth of September, 1836, is 189,980,035 dollars.

The amount of exports is 128,663,040 dollars, making an excess of imports over exports 61,316,995 dollars.

Of these imports 92,056,481 dollars, were of articles free of duty; 38,580,166 dollars, articles paying specifick duties; and 59,243,388 dollars, those paying ad valorem duties. Among the articles free of duty were 2,231,487 dollars, in gold and silver bullion, 11,169,384 dollars, gold and silver coin; teas 9,653,053 dollars, manufactures of silk 20,331,876 dollars, silks and worsted 3,171,023 dollars, linen 8,271,813 dollars, wool, not exceeding eight cents per pound 806,370 dollars.

Of articles paying ad valorem duties are woollen cloths and cassimeres, 8,926,382 dollars, printed and coloured cotton goods 12,192,980 dollars, white do. 2,766,787 dollars, silk goods from China 2,821,180 dollars, earthen and stone wares 2,424,514 dollars, indigo 1,513,477 dollars, wool exceeding eight cents per pound 463,756 dollars. Paying specifick duties, molasses 4,077,312 dollars, wine of all kinds 4,332,034 dollars, sugar, brown 11,623,699 dollars, white 890,805 dollars, cigars 1,058,857 dollars, bar iron 4,022,042 dollars, books, of all kinds 259,381 dollars, black bottles 259,554 dollars.

Of the goods exported, 21,746,360 dollars were of articles of foreign produce, and 106,926,680 dollars, domestick. Among the former were gold and silver bullion 328,645 dollars, do. specie 4,493,350 dollars, teas 869,164 dollars, coffee 1,985,176 dollars, printed and coloured cottons 1,375,156 dollars, white do. 666,871 dollars, sugar, brown 2,425,421 dollars, white 378,318 dollars.

The exports of domestick produce were, of produce of the fisheries 2,666,058 dollars, of the forest 5,361,740 dollars, of agriculture, pork 1,383,344 dollars, beef 699,116 dollars, flour 3,572,599 dollars, rice 2,558,750 dollars, tobacco 10,058,640 dollars, cotton 71,284,925 dollars, manufactures, soap and candles 478,310 dollars, boots and shoes 133,471 dollars, household furniture 214,046 dollars, hats 244,012 dollars, cotton piece goods, printed and coloured 256,025 dollars, white 1,950,795 dollars, gold and silver coin, 346,738 dollars.

AFRIC

We observe in a late n
work, the "Boston Medical a
a native African chief had re
the European settlements,
wife, as fair a lady as any
sian family. The chief stat
of Africa is a tribe of white
been visited by any traveller.

Every day seems to throw
teresting country. The six
per's Family Library is dev
adventure in Africa, and exh
compass, whatever is most i
tures and observations of the
the earliest ages, and in v
sought to explore that quar
make a few quotations from

[Chief Jillemen or Native Musici
Magicia

"Jobson earlier, perhaps,
man, had an opportunity of
and superstitions which are
ca. He found each prince
bands of musical bards, who
title of "juddies or fiddlers,"
the Irish rhymesters. These
from other authors, Jelle, or
on several instruments rudel
king a very loud noise. Th
Gregree-men, or magicians,
tired, often form singular gro
accompanying cut. The tw
those of circumcision and of
performed in a very rough
whole country; the forest bl
loud musick, shouts, and danc
out the night. At the funer
much crying and lamentation
what mechanical manner, w
the Irish howl. Flowers

were buried along with the deceased, and much gold was deposited for his service in the other world; but there is no mention of those human sacrifices which form so foul a blot on some of the most civilized African nations. At all festivals a conspicuous part was acted by a personage called Horey, which name our author interprets "the Devil." This being took his station in the adjoining woods, whence he sent forth tremendous sounds, supposed to be of sinister portent to all within hearing. The only remedy was to deposite, as near to the spot as any one would venture, a large supply of "belly-timber," the speedy disappearance of which authenticated to the villagers both the existence of this supernatural being, and the fact of his having been appeased. To Jobson, on the contrary, this very circumstance, combined with the severe hoarseness with which sundry of the natives were afflicted, afforded a clew to the origin of this extraordinary roaring. Of this he had soon ocular demonstration. Happening, in company with a marabout, to hear the Horey in full cry from a neighbouring thicket, he seized a loaded musket, declaring aloud his resolution forthwith to discharge the contents at his infernal majesty. The marabout implored him to stop; the tremendous sound was changed into a low and fearful tone; and Jobson, on running to the spot, found this mighty demon in the shape of a huge negro, extended on the ground in such agonies of fear, that he was unable even to ask for mercy."

[Tuarick on his Camel, with Male and Female Tibboo.]

When speaking of Denham and Clapperton's tour through the desert, we find the following:—

"In this route the travellers had on one side the Tibboos, on the other, the Tuaricks, two native tribes, probably of great antiquity, and having no alliance with the Arab race, now so widely spread over the continent. The Tibboos were on the left, and it was through their villages that the caravan passed. These people live partly on the milk of their camels, which pick up a scanty subsistence on the few verdant spots that rise amid the desert, partly by carrying on a small trade between Mourzouk and Bornou, in which they are so busily employed, that many do not spend at home more than four months of the year. They are black, though without the negro features; the men ugly, but the young females possessed of some beauty, not wholly obscured by the embellishments of coral stuck in the nose, and of oil streaming over the face. They are besides a gay, good-humoured, thoughtless race, with all the African passion for the song and the dance; which last they practise gracefully, and with movements somewhat analogous to the Grecian. This cheerfulness appears wonderful considering the dreadful calamity with which they are threatened every day. Once a year, or oftener, an inroad is made by their fierce neighbours, the Tuaricks, who spare neither age nor sex, and sweep away all that comes within their reach. The cowardly Tibboos dare not even look them in the face; they can only mount to the top of certain steep rocks, with flat summits and perpendicular sides, near one of which every village is built. They carry up with them every thing that can be removed, and this rude defence avails against still ruder assailants. The savage Tuaricks, again, were observed by Clapperton and Oudney in a journey to the westward from Mourzouk, and were found in their private character to be frank, honest, and hospitable. The females are neither immured nor oppressed, as is usual among rude and Mohammedan tribes, but meet with notice and respect; indeed, the domestick habits of this nation have much resemblance to the European. They are a completely wandering race of shepherds and robbers, holding in contempt all who live in houses and cultivate the ground; yet they are, perhaps, the only native Africans who have letters and an alphabet, which they inscribe, not on books and parchments indeed, but on the dark rocks that checker the surface of their territory; and in places where they have long resided, every stone is seen covered with their writings."

[Bornou Horseman, Kanemboo Spearman, and Munga Bowman.]

One of the modes in which the natives make war is thus stated:—

"The route lay along the banks of the river Yeou, called also Gambarou, through a country naturally fertile and delightful, but presenting a dismal picture of the desolation occasioned by African warfare. The expedition passed through upward of thirty towns, completely destroyed by the Fellatas in their last inroad, and of which all the inhabitants were either killed or carried into slavery. These fine plains were now overgrown with forests and thickets, in which grew tamarind and other trees, producing delicate fruits; while large bands of monkeys, called by Arabs "enchanted men," filled the woods with their cries. Here, too, was found Old Birnie, the ancient but now desolate capital, evidently much larger than any of the present cities, covering five or six miles with its ruins. They passed also Gambarou, formerly the favourite residence of the sultans, where the remains of a palace and of two mosques, gave an idea of civilization, superiour to any thing that had yet been seen in Interiour Africa. There were left in this country only small detached villages, the inhabitants of which remained fixed to them by local attachment, in spite of constant predatory inroads by the Tuaricks, who carried off their friends, their children, and cattle. They have recourse to one mode of defence, which consists in digging a number of *blaquas*, or large pits: these they cover with a false surface of sods and grass, into which the Tuarick, with his horse, plunges before he is aware, and is received at the bottom upon sharp-pointed stakes, which often kill the one or the other on the spot. Unluckily, harmless travellers are equally liable to fall into these living graves. Major Denham was petrified with horrour to find how near he had approached to several of them; indeed, one of his servants fell in, and was saved only by an almost miraculous spring. It seems wonderful that the sheik should not have endeavoured to restore some kind of security to this portion of his subjects, and to re-people those fine deserted regions.

The troops, which had been seen hastening in parties to the scene of action, were mustered at Kabshary, a town which the Mungas had nearly destroyed. The sheik made a review of his favourite forces, the Kanemboo spearmen, nine thousand strong. They were really a very savage and military-looking host, perfectly naked, except a girdle of goatskin, with the hair hanging down, and a piece of cloth wrapped round the head. They carried large wooden shields, shaped like a Gothick window, with which they warded off the arrows of the enemy, while they pressed forward to attack with their spears. Unlike almost all other barbarous armies, they kept a regular night-watch, passing the cry every half-hour along the line, and at any alarm raising a united yell, which was truly frightful. At the review they passed in tribes before the sheik, to whom they showed the most enthusiastick attachment, kneeling on the ground, and kissing his feet. The group on the preceding page, shows the three noted military characters—the Bornou horseman, the Kanemboo spearman, and the Munga bowman. The Mungas, again, were described as terrible antagonists, hardened by conflict with the Tuaricks, fighting on foot with poisoned arrows, longer and more deadly than those of the Fellatas. The sultan, however, contemplated other means of securing success, placing his main reliance on his powers as a Mohammedan doctor and writer. Three successive nights were spent in inscribing upon little scraps of paper figures or words, destined to exercise a magical influence upon the rebel host; and their effect was heightened by the display of sky-rockets, supplied by Major Denham. Tidings of his being thus employed were conveyed to the camp, whe
warriours who neve
ed to the power o
strength withered.
arrows were blunte
hearts struck with si
to oppose a sheik of
plish such wonders
They came in by hu
the ground, and castin
of the most abject sub
Fanamy himself, the
that resistance was ho
of conditional submissi
mounted on a white hor
ers. He was himself i
prostrate on the ground,
his head, when the sulta
humiliation, caused eight
one after another, to be
head to be wrapped in Eg
swelled to six times its na
resembled any thing hum
ours the sheik gained the h
pen had subdued; and th
him, not only to overcome t
midable tribe, but to conve
and bulwarks of his power."

[Queen of Lattakoo, Lattakoo Warriour, Hottentots.]

The Mantatees are one of the
the free tribes.

"The name Mantatee, which sig
applies, it is said, in no other respec
ting horde. They appear to be a C
habiting the country near Cape Na
lower course of the river Mapoota.
pelled to this inroad, in consequence o
driven from their own possessions by
still more fierce and warlike race, wh
casion, were led to victory by their
who can arm a hundred thousand fighti
has fifteen thousand constantly ready
small English settlement has been for
maritime border, which is encouraged b
erful chief with a view to commercial a
but of course much precaution is required
with a potentate who commands so ma
bows and spears.

The Mantatees, after their defeat, sep
several detachments, one of which set

the Kureechanes, while another advanced against the Caffres, whom they defeated, and part of whose territory they have since continued to occupy and plunder. In 1826, they came within two days journey of the British frontier, where there was nothing to prevent them from advancing upon the Scotch locations in Albany; but measures have since been taken, by which these settlements are placed in full security. The group in the preceding cut represents the queen of Lattakoo, a Lattakoo warriour, and two Bosjesman Hottentots."

[Negroes preparing the Manioc Root.]

In regard to the agricultural products of Africa, the author remarks :—

"In all the tropical and more arid regions, the prevailing grains are of inferiour character, coarse, and small—rather, as Jobson says, like seeds than grains, and fitted less for bread than for paste or pottage. The dhourra is the most common, extending over all Eastern Africa; while millet in the west, and teff in Abyssinia, are productions nearly similar. In the latter country and Houssa, both wheat and rice are raised, but only in favourable situations, and for the tables of the more opulent. Perhaps the greatest exertion of agricultural industry, is that bestowed upon the culture of the manioc, which forms the main article of food in Congo and some of the insular territories. Considerable care is required in rearing it, and cleaning the ground round the plants; after the root, which is the valuable part, has been dug up, it must be ground in a species of mill, and dried in small furnaces, before it can be used as flower. The process is represented in the accompanying cut."

AMERICAN CAVERNS.

EXTRAORDINARY CAVERN IN GEORGIA.

"Upon the representation of the citizens of Lafayette, a small but growing village in the county of Walker, Georgia, my attention was drawn to a subterranean cavern, some five or six miles from the above named village; and being rather an admirer of the works of nature, curiosity prompted me, accompanied by five or six others, to visit it.

The company being met, with lighted torches we entered the cave, through a small aperture, descending a flight of natural stairs almost perpendicularly, some ten or twelve feet. The company having all got down safe I could not avoid, in an ecstacy of admiration and wonder, exclaiming, "O Lord God Almighty, how wonderful are all thy works;" for we were then shown the grandest and most magnificent room that I have ever beheld, formed on each side with the utmost regularity, and ceiled over head with a perfectly smooth surface! and being desirous of viewing as minutely as we could, from the amplitude of this anomaly of nature, its various curiosities, we raised a considerable light, and illuminated the room as far as we could by the means we had, when we discovered that an almost infinite number of stalactites had been formed by the almost continual dripping of the water, resembling in size and appearance various animal bodies.

Being somewhat satisfied with our examination of this apartment, with our hearts glowing with wonder, love and praise to the Architect of nature, we moved slowly and rather pensively along this solitary and hitherto unexplored mansion, through devious wiles of "*incognita loca*," in quest of new discoveries.

Having reached the extreme end of this spacious dome, we found to proceed farther we had to ascend stupendous and almost inaccessible heights, over craggy precipices and yawning gulfs, to the height of some fifty or sixty feet, when by the dim light of our tapers, we discovered through a small opening another room less spacious but far more beautiful and picturesque;—for there appeared to the astonished beholder not only the representation of a part of the animal creation, but a true delineation of a great number of inanimate objects, such as cones, altars, pyramids, tables, candlestands, with a *fac simile* of some of nature's choicest productions; and it really appeared as if she, in her wild and playful moments, had intended to mock the curiosities of art. While gazing in dumb astonishment upon this delightful scenery, I was roused from my agreeable reverie, by a hollow and reverbrating sound, produced by one of the company, who being of a bold and adventurous spirit, had gone unobserved, into a remote part of the room, and beat with a stick, or something else which he held in his hand, several tabular spars, which echoed through this solitary mansion with almost deafening reverberations, which by the association of ideas, reminded me in some degree of the masticating clangor of the supper bell. We retired from our subterraneous abode, determined at some future period to explore more fully this prodigy of nature." Georgia paper.

FARMERS' DEPARTMENT.

BEES.

Having managed bees for ten years, I will give you the result of my observations.

I am of opinion that they are subject to disease as well as other creatures; but as to the nature of the disease, or remedy, I profess to know nothing.

The worst enemy to bees is the bee-moth. I have tried many experiments for the purpose of destroying them; such as trimming the lower edge of the gum, plastering with clay-mortar, setting the gum on cotton, but all to no purpose. The only mode of defeat that I can find, is to set the hives about two feet apart, on a bench of poplar wood. As the poplar will not crack as bad as other wood, the eggs are more easily destroyed. The fly deposits the eggs in the moonlight nights in July, August, and September. This year they have continued their work till about the middle of this month. In warm weather the eggs hatch in a day or two. The worms then commence the work of destruction in a few days if not soon destroyed. The gums being placed a small distance apart, they can be moved on a new spot, which exposes the worms to the sun, which soon kills them if they are too small to be detected by the eye. By moving the gums often, the worms are found on the bench, when they may be soon executed, as all such robbers should be.

The worms do not destroy hives after the bees have once filled their house. This is owing to their peculiar mode of warfare, which is this: they do not kill the bees, but drive them out. For this purpose they draw their webs round on the inside of the gum, till the bees cannot crawl up to the comb. The bees then quit their home and rich store, and go in pursuit of another; while the worms live luxuriantly on the rich spoil.

When the weather is cool, I lay my hives down once in ten days at least, and clean out all filth from them. In the winter I feed, if their stock of provisions becomes exhausted. I use molasses or sugar, mixed with boiled potatoes, or even corn bread made soft. By thus managing I have never lost a hive of bees. Southern Planter.

FIELD CULTURE OF PEAS.

Field peas should generally be sown as early in the spring as the ground can be put in proper order. The last week in April, or first week in May, will answer well in common seasons for sowing this crop. If, however, the soil is a light sandy loam, which is most proper for peas, they may usually be put into the ground still earlier to good advantage.

But when there is reason to apprehend that peas may be infested with bugs, it will be safest to sow them as late as the tenth of June. Col. Worthing, of Rensselaer county, N. Y., sowed his peas on the tenth of June, six years in succession, and a bug has never been seen in his peas. Whereas his neighbours, who have not adopted this practice, have scarcely a pea without a bug in it. He supposes the season for depositing the eggs of the pea-bug is passed before the peas are in flower. The late Col. Pickering likewise expressed an opinion that the bug might be avoided by late sowing, but apprehended that the hot sun in June would pinch the late sown peas, so that the crop would be small, unless the land be moist as well as rich.

The quantity of seed, when the peas are sown broad-cast, should be from a bushel and a half, to three bushels to the acre. It is observed in Dean' New England Farmer, that our farmers do not commonly allow a sufficient quantity of seed in broadcast sowing. When peas are sown thin, the plant lie on the ground, and perhaps rot; when they ar thick, the plants hold each other up with their tendrils, forming a complete web, and will have mor benefit of the air. Three bushels to the acre ar recommended by Dr. Dean.

Peas are sown in drills in field cultivation in thi vicinity, with success. The distance of the rows and the distance which the peas stand from eac other in the rows, depend upon the kind of pea sown. Dwarf peas, and a poor soil, should b nearer together than those that grow tall, and ar set upon a rich soil. Drilled peas are hoed two o three times, and should be earthed up a little, an kept free from weeds. Dr. Anderson, and othe agricultural writers, say that lime is the best manur for land which it is intended to sow with peas.

It has been practised by some to sow peas for th purpose of feeding hogs, without trouble of harvesting the crop. As soon as the pods fill, the hogs ar turned in to fatten, and what they do not consume i ploughed in as soon as the hogs have left the field.

METHOD OF HARVESTING INDIAN CORN.

If your hay is short, or you wish to sow winte grain after your Indian corn, or secure your cor against the effects of early frosts, you may cut u your cornhills close to the ground, in fair weather with a sharp knife or sickle, and lay two rows int one, in small bundles, as when you top and secur your stalks; bind your bundles above the ears, an stack the same day, in small stacks, either upon th borders of your field, or upon an adjoining field you may then plough and sow as upon fallow grounds; secure your stacks by doubling down th tops, and binding the heads with a pliable stalk this will exclude the rains which otherwise woul damage your corn. This corn will be ripe at th usual time, without the least diminution in its colour weight, or value; but in the opinion of some of th best farmers, (who are in the steady practice of thi mode from choice,) with an increased value to th grain. The increased quantity and value of you stalks will richly pay the expense; you may in thi way, bring forward the sowing of your winter grain two, three, or four weeks, which will again at harvest repay the expense of cleaning your corn-fields If you house your corn-stacks before you husk you corn, the pitching will be heavy, and your bundle often break, and your places for housing be difficul and inconvenient, and often exposed to your cattle therefore, husk your corn on the field, and empty your baskets into your cart as you husk, always remembering to leave the husk upon the stalk, b breaking off the cob; these will again repay you expense in feeding. The difference in the mode o husking, will at first be considerable; but a littl practice will soon remove this, and render them equal. It is of high importance for every farmer t know every mode of culture that will afford him successful advantage in managing his farm, and i this point of view, this does not rank as one of th least.

METEOROLOGICAL SKETCHES:

BY AN OBSERVER.

[From the American Coast Pilot. Thirteenth edition.]

THE science of Meteorology is not only interesting to the philosophic observer, but the natural phenomena of which it takes cognizance are such as daily affect the interest and comfort of every member of the human family. But to no class of persons are these phenomena, as exhibited in various parts of the world, of so much practical importance as to the members of the nautical profession. A competent knowledge of these exhibitions, or of geographical meteorology, is therefore an important element of that varied knowledge which is acquired by the skilful navigator.

GENERAL VIEW OF THE ATMOSPHERE.

The transparent aerial fluid which surrounds our globe, and which we denominate *the atmosphere*, forms a comparatively thin stratum or envelope, which in the immediate vicinity of the earth, is greatly compressed by its own weight, and which in its most expanded and tenuous state is supposed to extend itself to the height of only forty-five or fifty miles from the earth's surface. Its superincumbent pressure or weight is ascertained by means of the barometer, and is equal to a column of mercury about thirty inches in height. By means of this instrument we learn that one half its weight or actual quantity is within three miles and a half of the surface of the ocean; and it is within this limit that nearly all the visible or important phenomena of the atmosphere are apparently developed. The lower surface of the atmosphere is equal to about 200,000,000 square miles; and as a compression of the whole mass to the common density which it exhibits at the sea level, would reduce its entire height to about five miles, it follows that by this standard of comparison the height or thickness of the atmosphere is to its superficial extent in the proportion of only 1 to 40,000,000.

These several facts are too important to be lost sight of in our general reasonings upon the phenomena of atmosphere; and the more so, as we are prone to give too much *altitude* to our conceptions on these subjects. If we even consider the proper height or thickness of the atmosphere as equal to fifty miles, still, as compared with its entire surface, this is only equal to one five hundredth of the proportion which the thickness of a common sheet of paper, of the foolscap size, bears to its surface dimensions; and if we view the atmosphere either as condensed to the mean of the surface pressure, or in relation to the actual limit of all its tangible phenomena, it will only be equal to one five thousandth part of the proportional thickness here mentioned. We may hence perceive the inapplicability of analogical reasonings that are founded on the movements which occur in a chimney, or in an inclosed apartment, as attempted to be applied in explanation of the general movements of the atmosphere.

Two instruments of modern invention, the *barometer* and *thermometer*, are truly invaluable as testing the condition of the atmosphere, and their use should be familiar to every navigator. By the first, as we have seen, the amount or weight of the superincumbent atmosphere, at any place, may always be accurately known, and by the indications *of* the other, the temperature of the air, as well *as of* the ocean, may be ascertained with equal *precision.*

Among the most striking peculiarities of the atmosphere, are its rapid and almost constant movements of progression or circulation, which, with some unimportant exceptions, appear to prevail throughout the globe. These movements evidently show the continued operation of some powerful impulse, which to the writer at least, does not appear to have been satisfactorily explained. It is estimated from the average rate of sailing of ships during long voyages through different seas, and from other data, that the average velocity of the wind near the surface of the ocean is equal to eighteen miles an hour throughout the year, and in the common region of the clouds the velocity must be much greater.

TEMPERATURE OF ELEVATION.

Elevation above the level of the sea, or the general level of a country, causes a regular variation in temperature. The first 300 feet usually causes a difference of about one degree of Fahrenheit's thermometer. After ascending 300 feet, it is estimated that the thermometer falls a degree in 295 feet, then at 277, 252, 223, and 192 feet; but 300 feet to a degree is a common rule. On these principles the limit of perpetual frost has been calculated. It is made a little more than 15,000 feet at the equator, and from that to 13,000 between the tropics, and from 9,000 to 4,000 feet between latitudes 40° and 59°.

It has been found, however, that the above rule is subject to great variations, owing, probably, to the course, temperature, and super-position of the atmospheric currents which prevail in different regions at different altitudes. Colder currents are often found resting upon, or interposed between, those of a higher temperature, and *vice versa.* On the Himalaya mountains, in Asia, between the latitudes of 28° and 34° north, the region of vegetation has been found to extend several thousand feet above the supposed line of congelation in those latitudes. It is also remarkable that the line of perpetual snow is found at a much greater altitude on the *northern* side of these mountains than on the southern side in a lower latitude. From this it may be inferred that the temperature in high regions, as well as in lower situations, is greatly affected by the geographical course and physical condition of the currents of atmosphere which prevail in these regions.

STRATIFICATION AND ELEVATION OF THE CURRENTS OF THE ATMOSPHERE.

It is obvious, from the courses of the clouds and other light bodies which sometimes float in the atmosphere, that the movements of the latter are mainly horizontal, or parallel to the earth's surface. Notwithstanding this, the common theory of winds supposes a constant rising of the atmosphere in the equatorial regions, connected with a flow in the higher atmosphere towards the polar regions, and a counter flow at the surface towards the equator, to supply the ascending current. This ascending movement, however, has never yet been discovered, and it is easy to perceive that if it existed in the manner supposed, its magnitude and velocity must be altogether too great to have eluded observation

It is apparent, however, that different currents often prevail at different altitudes, superimposed one upon another, and moving at the same time in different directions. These currents are often of different temperatures and hygrometrical conditions, and are found moving with different degrees of velocity. It is by the influence of these currents that volcanic ashes, and other light substances, which are elevated by means of volcanic spouts or whirlwinds to the higher regions of the atmosphere, are conveyed to great distances, and in directions which are often contrary to the prevailing wind at the surface. On the eruption in St. Vincent, in 1812, ashes were thus deposited at Barbadoes, which is sixty or seventy miles to the windward and also on the decks of vessels still farther eastward, while the tradewind was blowing in its usual direction. On the great eruption of the volcano of Cosigüina, on the shores of the Pacific, in Guatemala, in January, 1835, the volcanic ashes fell upon the island of Jamaica, at the distance of eight hundred miles in a direct line from the volcano. Facts like these ought to put at rest the common theory of the tradewinds, according to which these ashes would sooner have fallen upon the northern shores of the gulf of Mexico, or the peninsula of of Florida. On the same occasion the volcanic ashes were also carried westward in the direction contrary to the tradewind on that coast, and fell upon H. M. ship Conway, in the Pacific, in lat. 7° north, long. 105° west, more than twelve hundred miles distant from the volcano, in the direction which is nearly opposite from Jamaica. These phenomena were doubtless the effect of two different currents prevailing at different elevations; but we shall seek in vain, in these developments for proof of the commonly received but imaginary system of the tradewinds.

The occasional interposition of a warmer current of atmosphere between the lower current and the higher regions, has been proved by the observations of aeronauts. In countries situated like the United States, where the surface is often occupied in winter, for long periods, by an intensely cold stratum of air from the interior elevations, the warm currents from lower latitudes appear to find their way at a superior elevation; and their presence in this position is often demonstrated by the phenomena which they induce.

CLOUDS, FOGS, AND RAIN.

The atmosphere is always pervaded by water in the form of transparent or invisible vapor, and the process of evaporation is continually carried on, except in cases where the thermometer is below what is called the dew point, or when the vapor is being condensed in the form of clouds, fogs, or rain. "Clouds and fogs are the same thing, being an assemblage of small vesicles of water floating in the atmosphere. At a distance in the atmosphere we see the whole as a cloud, but when the vapor sinks to the earth, or will not rise, and we are immersed in it, we call it a fog. Dew-fogs which hang over fields, are *stratus* clouds; and fogs which involve elevated objects, are *cumulous* clouds." It is to circumstances of distribution, light, shade, distance, and perspective, that the great variety in the *appearance* of the clouds is owing; and on this variety of appearance the following classification has been founded, by which the clouds have been considere as pertaining to seven classes :—

1. Like a lock of hair, or a feather, called *cirrus.*
2. A cloud in conical or rounded heaps, calle *cumulus.*
3. A horizontal sheet, called *stratus.*
4. A system of small fleecy or rounded clouds called *cirro-cumulus.*
5. The wavy or undulating stratus, called *cirro tratus.*
6. The cumulus and cirro-stratus mixed, calle *cumulo-stratus.*
7. A cumulus spreading out in cirrus, and rainin beneath, called *nimbus.*

The cirrus is usually the most elevated—sometimes as a gauze veil, or parallel threads. Its heigh is apparently from one to four miles.

Dew is the condensation of aqueous vapor upo the surface of a condensing body or substanc Clouds and fogs are watery particles condense from aqueous vapor while floating in the atmospher where they continue to float till precipitated, or agai dissolved. If by the concentration of these particle or by any additional condensation, their weight b increased beyond that which the extent of their su face can sustain, they then descend in the form c rain; and as the condensation ordinarily increase as the drops increase in magnitude, it is common t have more rain fall on the surface of the ground tha on an equal space upon the top of a house or churc Clouds, fogs, and rain are therefore essentially th same, the latter being the continuation or extensio of the same proc~~ess which~~ produced the former.

Owing to the evaporating properties of the atmosphere in the higher regions, as well as to the intensity of cold which there uniformly prevails, distinct clouds are seldom, if ever, found at a greate elevation than the summits of the highest mountains which is about five miles. At an intermediate region, however, the clouds are often at a temperatur above freezing, while the air at the surface is muc below the freezing point, and the earth covered wit snow. This condition of the clouds seems not unfrequently evident by their appearance to the eye c an observer. Snowy or frozen clouds are usuall dim and undefined in their aspect or appearance and a fall of snow may not unaptly be termed th fall of a frozen cloud.

OF HAIL.

Hail of small size, as it falls in wintry storms, appears as frozen rain-drops. From the occurence o this phenomenon in a freezing state of weather, w find evidence that a stratum of air in the region o clouds is at a temperature above the freezing point or warmer than that which is found at the surfac at the same time. A heavy fall of snow when th temperature is much below the freezing point, affords, perhaps, the same indication.

Summer hail of large size, which is deposited i a definite path or vein, or in a locality of limited extent, is usually accompanied by heavy thunder an vivid or continued lightnings, or a heavy rumblin sound or rapid concussions, high winds, &c., and i believed to be the production of a vortex or whirl wind in the atmosphere, or *spout* as it is sometime called, which is connected at its upper extremit with an overlaying stratum of unusually cold air. A portion of this cold stratum probably descends on the exterior of the vortex, and reaching the earth's surface, is pressed into the vortex, and there entwined or laminated with the layer of warm and humid air of the surface, which is drawn in at the same time. A rapid condensation, as is known, thus commences at the lower extremity of the whirling mass or column, and the condensed and frozen drops, passing into layers of air, which are alternately above and below the freezing point, are carried upward by the powerful whirling and ascending action of the vortex, till, with the successive coatings of condensation received, they are finally discharged into the cold stratum at the upward extremity of the vortex, owing to the reduced temperature of which, they are prepared to receive a renewed accession during their fall to the earth; or perhaps by their accumulated weight they are sometimes thrown through the sides of the vortex before reaching its higher extremity. By this violent gyratory and elevating action some of the hail-stones are thrown against each other and broken; and each successive layer of congelation may often be seen in the fractured sections of the hail. In all vorticular condensations of this character, when the cold is not sufficiently intense to produce hail, drops of rain are produced of a much greater size than are ever found in a common and direct fall of rain.

Hail storms of this character are less frequent in the tropical regions than in the temperate latitudes, for the reason, probably, that a stratum of sufficient cold to produce the hail, is seldom found so near the inferior stratum that a vorticular communication can be established with the former, by means of an ordinary gust, spout, or whirlwind. Nor does this ordinarily happen in the temperate latitudes; but only when the lower warm stratum becomes overlaid, in close proximity, by a stratum from a colder region; an event which is not unfrequent in most countries within the temperate latitudes. It commonly happens, therefore, that several hail storms of greater or less magnitude and violence, occur on the same day, or about the same period.

OF THUNDER STORMS, AND GUSTS.

When a cold stratum or current of the upper atmosphere moves or rests upon a warm one which is next the earth, neither stratum, as such, can penetrate, or displace the other. Nor can a sudden interchange or commingling take place between the masses or particles of which these strata are composed, except by the slow and tedious process of the successive action and convolution of single particles, or small groups of particles, upon or around each other: but if a communication or interchange between the two strata become established by means of the action of a gradually excited whirlwind or water-spout, or if, owing to any inequality of surface or other accident, a depression is made upon the lower stratum, so as to enable the colder air to descend at this point, then an immediate gyration or convolution will take place in the two masses at this point, the warm air rising as it becomes displaced, and a copious condensation will immediately follow. It is movements of this character which produce the dense and convoluted appearance known as a thunder cloud, and the thunder and lightning, rain, and perhaps hail, follow as necessary results.

The precipitation of the colder stratum thus commenced, is regularly continued and enlarged till an equilibrium is produced, and the thunder storm thus engendered, assumes, of course, the direction of the upper current to which it is appended, and which, in the temperate latitudes, is commonly from the western quarter. The warm surface air which is thus displaced at the commencement of the process, rises immediately in front of the colder intruding mass, and by the gyratory action thus commenced, becomes convoluted in detached masses or layers with the colder surrounding air, and by the reduction of temperature thus produced, furnishes the large supply of aqueous vapor which is first condensed in the thunder cloud, and then precipitated in a heavy fall of rain; and the electric phenomena which are induced by this sudden contact or intermingling of masses of air of different temperatures and hygrometric conditions, become highly vivid, and too often destructive. The active gyration which is commonly produced within the body of the thunder storm or gust, is in the direction of the advance of the storm and of the rising warm air which is forced upward, or in the direction of forward and upward at the lower front of the storm.

In consequence of this gyratory action, a storm which advances at the rate of fifteen or twenty miles an hour, is often known to exhibit a velocity of wind during the period of its greatest violence, of sixty or eighty miles an hour. If the axis of this gyration in a thunder storm assumes from any cause a vertical position, we then have a perfect whirlwind or tornado, which, if it be so situated as not to reach the earth by its direct action, will exhibit to us the phenomena of a heavy thunder storm accompanied by rumbling sounds and concussions, and a fall of hail in or near some portion of its path. But if the regular action of the whirlwind should reach the earth, and continue for some time, great destruction may be expected to follow. The path of these destructive whirlwinds is generally narrow, and often but a few hundred yards in width.

From the nature of the causes which we have set forth as being favorable to the occurrence of a thunder storm, it follows that many of these storms will be likely to occur on the same day, in different parts of the same country, as has been already remarked in the case of hail storms, with which they are often identical; and the writer has often found this to be true to a remarkable extent. The fatal accidents by lightning, in different parts of the country, have often happened on the same day, and we have reason to believe that scores of tornadoes, hail storms, and thunder storms, have sometimes occurred on the same afternoon. It usually happens that the precipitations of colder atmosphere at these numerous points of disturbance, is sufficient to produce a marked change in the temperature of the surface stratum within a period of twelve hours thereafter.

Atmospheric disturbances of this kind, which do not produce violent thunder or hail, are usually denominated *squalls*; and it appears highly probable that the presence of air of a temperature considerably above the freezing point, is necessary to the production of thunder and lightning. In the strait of Magalhaens, in Patagonia, where the air at the surface is neither warm nor very cold, the squalls, called by the sailors williwaws, are very frequent, and tremendously severe; but, according to the observations of Capt. P. P. King, lightning and thunder are seldom known.

The heavy condensation presented in a thunder cloud, is often spoken of in a manner which implies that the cloud possesses some mechanical or other energy by means of which the violent wind is sent forth; but nothing can be more unreal than such a supposition. The cloud may indeed be the means of electric development, and furnishes also the watery deposition for the hail or rain, but all the particles of the cloud are passively inert, like those of a common fog or mist, and the violent winds and disturbing forces which may be present, may have operated to produce the cloud, but do not, in any important sense, result from its action.

(Concluded in our next.)

THE MECHANISM OF A FEATHER.

Even in this comparatively humble object we have cause to contemplate the display of Omniscience and divine perfection with the utmost admiration.

The outward surface of the quill and and stem of a wing-feather in any bird who is accustomed to fly, is of a very hard, stiff, and horny substance, and filled with a pith which, on examination by the microscope, appears to be formed of a congeries of small bubbles, the films of which seem to be of the same substance with that of the quill. As for the make and contexture of the down itself, they are, indeed, admirable, and are not, perhaps, to be surpassed in any body in the known world: for there is hardly a large feather in the wing of a bird which does not contain nearly a million of distinct parts, every one of which is shaped in the most exquisite form, and adapted to a particular design.

On the examination of a middle sized goose-quill, it may be perceived, even by the naked eye, that its main stem contains about three hundred longer and more downy branches upon one side, and as many on the other, of more stiff, but somewhat shorter branchings. Many of these branchings, on being viewed through an ordinary microscope, are found to comprise nearly twelve hundred leaves or filaments, and as many stalks, if they may be so denominated, on the back of which each of the leaves or branchings seem to be divided into sixteen or eighteen small joints, from whence emanate small long fibres, each proportionably shaped according to its position, (those in the under side of the joint being much longer than those directly opposite to them in the upper,) and many of them terminated with small crooks, much resembling those small crooks which are visible to the eye in the seed buttons of burdocks. The stalks likewise on the other side are divided into as many small knotted joints, but without any appearance of strings or crooks, each of them about the middle being divided into two parts by a kind of fork, one prong of which is longer than the other.

The stems of the downy branches are so arranged, that the leaves or hairy stalks of the one side lie at top, or are incumbent on the stalks of the other, and also cross each other, by which means every one of these little hooked fibres of the leaved stalk
insinuates itself betwe
being full of knots and
fibres can easily get b
are so closely and ad
they are enabled to im
transcussion of the air
ceedingly small that t
stalks does not amount
an inch, yet they comp
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The contrivance and
evince an admirable pro
are such that, though
parts of which they are
so as that the leaves an
other, and consequently
impede the bird's flying;
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selves, and are easily,
feather or drawing it th
settled and woven into t
sition; for there is such
fibres in the under side
them have such little cro
readily catch and hold t

From this instance in
ers in birds, we may obs
if not in all, at least in
under our investigation, p
the greatest uniformity.

LINES ON THE WICKEDNES

Ye temperance societie
  Who drunkenness es
Please to indict the nor
  For making people bl
Go forth, like David, ar
  Against the tyrant foe
That hates your cause,
  Your darling liquor f

Its very name is given t
  Of which ye are detest
Tars call their devil's ho
  If strong, "good stiff
And from the self-same
  When they're with dri
It's quite a common thin
  They're "three sheets

Nor is this all. I heard
  As I did kneel to pray,
Profanely whistling roun
  Upon a Sabbath day!
Ah! while this "charter
  Pursues his frosty froli
Vain is your puritanick
  Cold throats can't go h

But if ye wish mankind
  Nought else but Adam'
And think that rum their
  Outside of Mercy's *pal*
I'll tell you what 't were
  Yea, by the beard of G
Fine 'em whenever they
  And when they do n't,

I 've done. This short a
  Let none misunderstan
I swear by all that 's wat
  I 'm with you, throat a
By rich and poor, by larg
  I 'm held a temperance
And always doff my beav
  I chance to pass a pum

USEFUL KNOWLEDGE.

Cream Cake.—A quart of cream; four eggs; sifted flour sufficient for a thick batter; a small tea-spoonful of pearlash or sal-eratus; a spoonful of salt; beat four eggs very light, and stir them by degrees (a little at a time) into a quart of cream; add, gradually, enough of sifted flour to make a thick batter; put in the salt; dissolve the pearlash in as much vinegar as will cover it, and stir it into the mixture. Bake it in muffin-rings. Send the cakes to the table quite hot; pull them open, and butter them.

For these cakes, sour cream is better than sweet. The pearlash will remove the acidity, and the batter will be improved in lightness.

Milk Pound Cake.—A pound of sifted flour; half a pound of butter; half a pound of white sugar; five eggs; a small tea-spoonful of sal-eratus or pearlash dissolved in half a pint of milk; sour milk is best—a tea-spoonful of mixed spice, nutmeg, mace, and cinnamon, finely powdered; stir together the butter and sugar; beat the eggs till very light, and then stir them into the butter and sugar in turn with the sifted flour; add the spice; lastly stir in, gradually, the milk in which the pearlash has been melted. Put the mixture into a buttered tin pan, and bake it in a moderate oven. If you prefer baking it as small cakes in little tins, you must have half a pound and two ounces of butter.

White Cup Cake.—The cups in which most of the ingredients are measured, must be of half pint size. Four cups of sifted flour; three cups of powdered white sugar; one cup of fresh butter; one cup of milk; four eggs; one glass of white wine, or a glass of rose-water; a tea-spoonful of mixed spice, powdered cinnamon, nutmeg, and mace; a salt-spoonful of pearlash, melted in the milk. Having prepared the spice, and sifted the flour, stir together the butter and sugar till very light, and set it away to cool. Beat the eggs till quite thick, and then stir them into the butter and sugar alternately with the flour. Then add gradually the spice and the liquor, and lastly the pearlash and milk, a little at a time. Stir very hard. Bake it in little tins, which must be well buttered.

Ginger Syrup.—Take one pound of race ginger, beat it into small pieces in a mortar. Lay them in a pan, cover them with water, and let them soak all night. Next day take the ginger with the water in which it has soaked, put it into a preserving-kettle, with two gallons of water, and boil it down to seven pints. Let it settle, and then strain it through muslin. Put one pound of loaf sugar to each pint of the liquor. After the sugar has melted in the liquor, return it to the kettle, and boil it one hour more, skimming it well. When cold, bottle it for use.

Incombustible Wash and Stucco White-wash.—The basis for both is lime, which must first be slakened with hot water, in a small tub or piggin and covered to keep in the steam; it then should be passed in a fluid form, through a fine seive, to obtain the flour of the lime; it must be put on with a painter's brush; two coats are best for outside work.

First.—To make a fluid for the roof, and other parts of wooden houses, to render them incombustible, and coating for brick, tile, stone-work, and rough cast, to render them impervious to the water, and give them a durable and handsome appearance.

The proportion is each recipe five gallons.

Slake your lime as before directed, say six quarts into which put one quart of clean rock-salt for each gallon of water, to be entirely dissolved by boiling and skimming clean; then add to the five gallons one pound of alum, half a pound of copperas, and three-fourths of a pound of potash, the last to be gradually added; four quarts of fine sand or hard-wood ashes must also be added, and colouring-matter may be mixed in such quantity as to give it the requisite shade. It will look better than paint, and be as lasting as slate. It must be put on hot. Old shingles must be first cleaned with a stiff broom, when this may be applied. It will stop the small leaks, prevent moss from growing, render them incombustible, and last many years.

Second.—To make brilliant stucco white-wash for buildings, inside and out. Take clean lumps of well burnt stone lime; slake the same as before; add one quarter pound of whitening or burnt alum pulverized, one pound of loaf or other sugar, three pints of rice flour, made into a very thin and well-boiled paste, starch, or jelly, and one pound of clean glue, dissolved in the same manner as cabinet-makers do. This may be applied cold when in doors, but warm outside. It will be more brilliant than plaster-of-paris, and retains its brilliancy for many years, say from fifteen to one hundred. It is superiour, nothing equal. The east end of the president's house, in Washington, is washed with it.

To Clean Alabaster.—A pint of cold rain-water, and two ounces of aquafortis, mixed together. Wash the alabaster in this liquid, with a brush, for five minutes. Then rinse it in clean water, wipe it, and set it for two or three hours in the sun to dry. No soap should be used, it discolours the alabaster.

Flowers.—Most flowers begin to droop and fade, after being kept twenty-four hours in water; a few may be revived by substituting fresh water, but all (the most fugacious, such as the poppy, excepted) may be completely restored by the use of hot water. For this purpose, place the flowers in scalding water, deep enough to cover about one-third of the length of the stem; by the time the water has become cold, the flowers will have become erect and fresh; then cut off the coddled or parboiled end of the stems, and put them into cold water.

To make Plate look like new..—Take of unslaked lime and alum, a pound each; of aqua-vitæ and vinegar, each a pint; and of beer-grounds, two quarts; boil the plate in these, and they will set a beautiful gloss upon it.

MISCELLANY.

Depth of the Sea.—The depth of the sea is supposed to extend to four or five miles, as there are mountains of that height on dry land; but until we can find the means of measuring so deep a descent, this must be mere conjecture. Our soundings have not yet been found practicable to the extent of two miles. Dr. Young intimates the mean depth of the Atlantick Ocean to be about three miles, and that of the Pacifick, four miles. But the European seas are less profound. Lyell informs us that the greatest depth of the Adriatick, between Dalmatia and the mouths of the Po, is twenty-two fathoms. The Mediterranean varies very much. Between Gibraltar and Ceuta, Captain Smith sounded nine hundred and fifty fathoms, (one thousand nine hundred yards) to a gravelly bottom. Saussure, at Nice, to two thousand feet. In the narrowest parts of the straits of Gibraltar, where they are nine miles broad, the depth varies from one hundred and sixty to five hundred fathoms, (from three hundred and twenty to one thousand yards.) La Place infers that the depth of the sea is inconsiderable. Its mean depth is of the same order as the mean heights of continents and isles above its level, whose height does not exceed one thousand metres, (one thousand and ninety-three yards.) But as high mountains are spread over some parts of the continent, so there may be great cavities in the bottom of the sea. Captain Parry, in 57° N. lat., 24° W. long., about one hundred leagues from land, found no bottom, with a line of one mile and two hundred and eighty yards, which was a quarter of a mile deeper than was reached by Lord Mulgrave; but Mr. Scoresby, in 76° N. lat., 4° W. long., got a line down of one thousand two hundred fathoms, or one mile and six hundred and forty yards, without finding a bottom. Mr. Fairholme remarks, that this is probably the greatest depth of sounding ever attempted.

Vegetation.—Vegetable life resembles nothing known in nature but animal life, and with this it has a striking analogy. Many of their functional operations have been noticed to be alike; and these in both require the presence and co-operation of their living principle, and cease in both when that is withdrawn.

Subsistence.—How little and how simple a diet would have supported human existence in comfort and activity, we see from this passage: A Laplander will go thirty miles through swamps and rocks, take *a draught of milk*, sleep in his wet clothes, and rise the next morning *as fresh* as when he began his journey. The high state of health and spirits of the Laplanders may be ascribed to their total absence of mental anxiety, to their few and simple wants, and to their hardy habits.

Ash-Tree.—The living principle of vegetation exerts itself with singular force and apparent judgement, in searching for its nutrition when the ordinary sources and supply of it fail. Dr. Walker mentioned to Sir J. Smith, that an ash-tree which grew from a seed on a wall, stopped its growth for awhile, having exhausted the nutriment there; but sent a
root down the wall until i
as soon as this was establ
resumed its vegetation, ar

"Hobson's Choice."—T
common proverbial expres
guage.

Thomas Hobson was
He died the first of Jar
who was a student at the
wrote a whimsical epitapl
of him, *en fresco*, was a
Bishopsgate street, which
when in London, and wl
inscription, might have b
years. To his employm
the business of supplying
and having made it an u
horse should have an equ
bour, he would never let
hence arose the saying
"this or none."

Hatching.—All birds er
gacity, that their eggs ir
proper degree of heat, an
of them for that purpose
soning, and acting right
most birds are in the habi
of the eggs from the cen
and *vice versa*, that all of t
share of warmth.

Sea-weed.—Every veg
ceeded in size by the p
cystis pyrifera. This ap
reported by navigators to
one thousand five hundre
stem is not thicker than t
branches as slender as the

Expansion of Water by
Whig of the 22d ult., give
the expansive power of c
ted in that city:—"An in
in the iron foundry of H
weighing between three a
ing three feet in diameter
door of the furnace, exp
The anvil was perfectly s
a very small crack or crev
of the sides, about five in
inches in depth, which f
filled with water. The
the crevice contained coul
a gill. In the course of t
instant, this water became
as it may appear, its expa
in two parts the immense
so great was its expansi
separation took place, a
lay on the top of the anvil
of several feet. Had the
powder, and the powder
not have been a thousand

Planting.—All trees, n
planted by slips or branch

LITERARY NOTICES.

Athens: its Rise and Fall; with Views of the Literature, Philosophy, and Social Life of the Athenian People. By **Edward Lytton Bulwer**, Esq., Author of "Pelham," "the Disowned," &c. In two volumes. New York: Harper & Brothers, 1837.

"To vindicate (remarks Mr. Bulwer, in the first section of Athens) the memory of the Athenian people, without disguising the errours of Athenian institutions;—and, in narrating alike the triumphs and the reverses—the grandeur and the decay—of the most eminent of ancient states, to record the causes of her imperishable influence on mankind, not alone in political changes, or the fortunes of fluctuating war, but in the arts, the letters, and the social habits, which are equal elements in the history of a people;—this is the object that I set before me;—not unreconciled to the toil of years, if, serving to divest of some party errours, and to diffuse through a wider circle such knowledge as is yet bequeathed to us of a time and land, fertile in august examples and in solemn warnings—consecrated by undying names and memorable deeds."

In the two volumes before us, Mr. Bulwer combines an elaborate view of the literature of Athens, (which contributes more than her warlike deeds, to render her illustrious,) with a complete and impartial account of her political transactions. These two volumes bring the reader in one branch of the subject to the supreme administration of Pericles; in the literary portion to a critical analysis of the tragedies of Sophocles. Mr. Bulwer proposes in two after volumes, to close the records of Athens at that period when, with the accession of Augustus, the annals of the world are merged into the chronicle of Roman history. In these latter volumes it is his intention to complete the history of the Athenian drama—to include a survey of the Athenian philosophy—to describe the manners, habits, and social life of the people, and to conclude the whole with such a review of the facts and events narrated as may constitute, perhaps, an unprejudiced and intelligible explanation of the *causes* of the rise and fall of Athens. The style of Athens is extremely pleasing, and the notes are deeply imbued with the classick lore of the author.

Crichton, by the author of "Rookwood." In two volumes. New York: Harper & Brothers. This novel from the pen of **William Harris Answorth**, Esq., is decidedly one of the most entertaining which has been published for many a day. The author taking for his hero, the "admirable Crichton," whose short but splendid career, forms one of the most brilliant pages of history, has produced a book of uncommon interest and power. In fact only make a beginning and the reader will find it impossible to lay the book aside, before he has finished it. We commend it to our readers.

The Anatomy of a Humbug, of the Genus Germanicus, Species Homœopathia. New York, 1837. A very clever expôse of the new doctrine which certain interested pretenders are endeavouring to palm off upon the publick, as a wonderful all-curing system of medical practice. A greater imposition was never attempted upon the credulous American; and we say to our readers, beware of homœopathic doctors as you would of so many rattlesnakes.

The author of this pamphlet exhibits a full acquaintance with his subject and treats of it in a manner partly serious and partly jocose. In his preface he remarks, "The disciples of Hahneman have issued multitudes of pamphlets, setting forth, in their own way, their own doctrines. There has been no full statement of the doctrine of homœpathy made that has been accessible to the general reader; and as efforts are making to impose this absurdity upon the publick, the present exposition has been undertaken, with a hope that the good people in this country may be induced to place a just estimate upon the Hahnemanick system." It is dedicated to all people of common sense, and it may be had of the booksellers generally

The Magazine of Horticulture, Botany, and all Useful Discoveries, and Improvements in Rural Affairs. An extremely valuable work upon the different subjects of which it treats; it will be found useful to all amateurs of flowers and flower gardens. It not only indicates what is desirable in horticulture, but points out the mode of accomplishing it. It is published in monthly numbers of forty pages each, at three dollars per annum, and is issued in New York, by Israel Post, 88 Bowery, and in Boston, by Hovey & Co., Cornhill.

An Historical Account of the Circumnavigation of the Globe, and of the Progress of Discovery in the Pacifick Ocean, from the Voyage of Magellan, to the Death of Cook. New York. Harper & Brothers. A very interesting and valuable book, presenting in a continued narrative the progress of maritime discoveries, and the advance of geographical knowledge. This volume forms the eighty-third number of Harper's Family Library; it is embellished with several engravings which add much to its worth.

Bayle's Elementary Treatise on Anatomy. Translated from the fourth edition of the French. By A. **Sidney Doane**, A. M., M. D. In one volume, 18 mo. New York: Harper & Brothers. "The chief merits of this treatise," as expressed in the translator's preface, "are, great accuracy and conciseness of description, with a happy arrangement of the subject;" and we may add, that it contains more really useful matter, in the same space, and is sold at a much cheaper rate, than any anatomical work with which we are acquainted. Bayle's Anatomy is particularly adaped to the lecture-room and anatomical theatre, beside being valuable as a reference for the practitioner. It is sufficient recommendation to the American profession to say, that this treatise has passed through four editions in Paris, and that it is now translated by Dr. Doane. This is the tenth French work that has received the honour of an English dress from the same hand, seven of which have been issued from the press of Harper and Brothers, and two are yet in the process of publication. In addition to these, Dr. Doane has edited "Good's Study of Medicine," to which he has appended many useful notes, and has also contribited liberally to some of the medical periodicals.

The books translated by Dr. Doane are, Meckel's Anatomy, in octavo; Blandin's Topographical Anatomy, in one volume, octavo, with a quarto volume of plates; Dupuytren's Lectures on Surgery, one volume, octavo; Scoutetten on Cholera, one volume, octavo; A Table of Arteries of the Human Body, from Chaussier; Maygrier's Midwifery, illustrated with eighty-two plates, in one volume, octavo; A Compilation of Surgery, with two hundred and eighty illustrations, contained in fifty-two plates, one volume, octavo. The works in *press* are, "Anatomy Illustrated," compiled from the works of eminent French writers, and a "Treatise on the Theory and Practice of Medicine and Surgery," by L. C. Roche, and L. L. Sanson. Dr. Doane has thus performed a greater amount of labour in medical literature than any man in this country; and in placing the above named books in the hands of the profession, he has not only laid his brethren under weighty obligations to him, but has proved himself a benefactor to his race.

Knickerbocker.

A TALE OF WESTERN CHIVALRY.

The frontispiece of the present number represents one of those scenes which were formerly so frequent in spots which are now densely populated, one of those brave actions in which the hardy pioneers of the west, those gallant fellows who fought their way inch by inch against the native redmen of the forest, were so frequently engaged.

The memories of these actions are fast passing away. Would that they might be perpetually recorded. That Americans might always have before them a record of the perils and sufferings of their fathers. The following account of the desperate struggle of Adam Poe is from M'Clung's interesting sketches:—*

"About the middle of July, 1782, seven Wyandotts crossed the Ohio a few miles above Wheeling, and committed great depredations upon the southern shore, killing an old man whom they found alone in his cabin, and spreading terrour throughout the neighbourhood. Within a few hours after their retreat, eight men assembled from different parts of the small settlement and pursued the enemy with great expedition. Among the most active and efficient of the party were two brothers, Adam and Andrew Poe. Adam was particularly popular. In strength, action and hardihood, he had no equal—being finely formed and inured to all the perils of the woods."

"They had not followed the trail far, before they became satisfied that the depredators were conducted by Big Foot, a renowned chief of the Wyandott tribe, who derived his name from the immense size of his feet. His height considerably exceeded six feet, and his strength was represented as Herculean. He had also five brothers, but little inferior to himself in size and courage, and as they generally went in company, they were the terrour of the whole country. Adam Poe was overjoyed at the idea of measuring his strength with that of so celebrated a chief, and urged the pursuit with a keenness which quickly brought him into the vicinity of the enemy. For the last few miles, the trail had led them up the southern bank of the Ohio, where the footprints in the sand were deep and obvious, but when within a few hundred yards of the point at which the whites as well as the Indians were in the habit of crossing, it suddenly diverged from the stream, and stretched along a rocky ridge, forming an obtuse angle with its former direction. Here Adam halted for a moment, and directed his brother and the other young men to follow the trail with proper caution, while he himself still adhered to the river path, which led through clusters of willows directly to the point where he supposed the enemy to lie. Having examined the priming of his gun, he crept cautiously through the bushes, until he had a view of the point of embarcation. Here lay two canoes, empty and apparently deserted. Being satisfied, however, that the Indians were close at hand, he relaxed nothing of his vigilance, and quickly gained a jutting cliff, which hung immediately over the canoes. Hearing a low murmur below, he peered cautiously over, and beheld the object of his search. The gigantick Big Foot, lay
below him in the sh
in a low deep tone
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back, and cocked hi
distance did not exc
unerring. Raising
he took a steady aim
the trigger. His gu
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for a single second
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was too much hamp
and setting his life u
over the bush which
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and alighted upon the
which bore him to th
tact, Adam had also
neck of the smaller I
the earth together."

"At that moment
the bushes above, an
were engaged, but th
attend to any thing b
for an instant stunned
and Adam was enab
But the exertion nec
great, that he had no
Foot quickly recover
rise, wrapped his lon
and pressed him to hi
of a Boa Constrictor!
remarked, was a pow
countered his equal,
embrace like that of B
his hold of the small
Big Foot then ordere
which lay within ten
while he held him in
danger, struggled man
the folds of the giant,
approached with his
watched him closely,
gave him a kick so s
the tomahawk from hi
ing back into the wat
mation in a tone of d
his companion, and r
pitch, thundered out
tongue, which Adam
posed to be a directi
lesser Indian now aga
ning Adam's heels, a
his tomahawk, in orde
where the blow woul
seconds, until a thun
Foot, compelled his c
Adam's dexterity an
managed to receive th
tion upon his left wr
not disabling him. H
perate effort to free
giant and succeeded.
(for the Indian could
hurting his compani
through the body. I
when Big Foot arose,
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* Sketches of western adventure, containing an account of the most interesting incidents connected with the settlement of the west, from 1755 to 1794; together with an appendix, by John A. M'Clung.

feet into the air, as he himself would have pitched a child. Adam fell upon his back at the edge of the water, but before his antagonist could spring upon him, he was again upon his feet, and stung with rage at the the idea of being handled so easily, he attacked his gigantick antagonist with a fury which for a time compensated for inferiority of strength. It was now a fair fist fight between them, for in the hurry of the struggle neither had leisure to draw their knives. Adam's superior activity and experience as a pugilist, gave him great advantage. The Indian struck awkwardly, and finding himself rapidly dropping to leeward, he closed with his antagonist, and again hurled him to the ground. They quickly rolled into the river, and the struggle continued with unabated fury, each attempting to drown the other. The Indian being unused to such violent exertion, and having been much injured by the first shock in his stomach, was unable to exert the same powers which had given him such a decided superiority at first; and Adam, seizing him by the scalp lock, put his head under water, and held it there, until the faint struggles of the Indian, induced him to believe that he was drowned, when he relaxed his hold and attempted to draw his knife. The Indian, however, to use Adam's own expression, "had only been POSSUMMING!" He instantly regained his feet, and in his turn put his adversary under."

"In the struggle, both were carried out into the current, beyond their depth and each was compelled to relax his hold and swim for his life. There was still one loaded rifle upon the shore, and each swam hard in order to reach it, but the Indian proved the most expert swimmer, and Adam seeing that he should be too late, turned and swam out into the stream, intending to dive and thus frustrate his enemy's intention. At this instant, Andrew, having heard that his brother was alone in a struggle with two Indians, and in great danger, ran up hastily to the edge of the bank above, in order to assist him. Another white man followed him closely, and seeing Adam in the river, covered with blood, and swimming rapidly from shore, mistook him for an Indian and fired upon him, wounding him dangerously in the shoulder. Adam turned, and seeing his brother, called loudly upon him to "shoot the big Indian upon the shore." Andrew's gun, however, was empty, having just been discharged. Fortunately, Big Foot had also seized the gun with which Adam had shot the lesser Indian, so that both were upon an equality. The contest now was who should load first. Big Foot poured in his powder first, and drawing his ramrod out of its sheath in too great a hurry threw it into the river, and while he ran to recover it, Andrew gained an advantage. Still the Indian was but a second too late, for his gun was at his shoulder, when Andrew's ball entered his breast. The gun dropped from his hands and he fell forward upon his face upon the very margin of the river. Andrew, now alarmed for his brother, who was scarcely able to swim, threw down his gun and rushed into the river in order to bring him ashore—but Adam, more intent upon securing the scalp of Big Foot as a trophy, than upon his own safety, called loudly upon his brother to leave him alone and scalp the big Indian, who was now endeavouring to roll himself into the water, from a romantic desire, peculiar to the Indian warriour, of securing his scalp from the enemy. Andrew, however, refused to obey, and insisted upon saving the living, before attending to the dead. Big Foot, in the meantime, had succeeded in reaching the deep water before he expired, and his body was borne off by the waves, without being stripped of the ornament and pride of an Indian warriour."

"Not a man of the Indians had escaped. Five of Big Foot's brothers, the flower of the Wyandott nation, had accompanied him in the expedition, and all perished. It is said that the news of this calamity, threw the whole tribe into mourning. Their remarkable size, their courage, and their superiour intelligence, gave them immense influence, which, greatly to their credit, was generally exerted on the side of humanity. Their powerful interposition, had saved many prisoners from the stake, and had given a milder character to the warfare of the Indians in that part of the country. A chief of the same name was alive in that part of the country so late as 1792, but whether a brother or a son of Big Foot, is not known. Adam Poe recovered of his wounds, and lived many years after his memorable conflict; but never forgot the tremendous "hug" which the sustained in the arms of Big Foot."

THE LIVE-OAKERS.

THE greater part of the forests of East Florida principally consists of what in that country are called "Pine Barrens." In these districts, the woods are rather thin, and the only trees that are seen in them are tall pines of rather indifferent quality, beneath which is a growth of rank grass, here and there mixed with low bushes and sword palmettoes. The soil is of a sandy nature, mostly flat, and consequently either covered with water during the rainy season, or parched in the summer and autumn, although you meet at times with ponds of stagnant water, where the cattle, which are abundant, allay their thirst, and around which resort the various kinds of game found in these wilds.

The traveller who has pursued his course for many miles over the barrens, is suddenly delighted to see in the distance the appearance of a dark "hummock" of live-oaks and other trees, seeming as if they had been planted in the wilderness. As he approaches, the air feels cooler and more salubrious, the song of numerous birds delights his ear, the herbage assumes a more luxuriant appearance, the flowers become larger and brighter, and a grateful fragrance is diffused around. These objects contribute to refresh his mind, as much as the sight of the waters of some clear spring, gliding among the undergrowth, seems already to allay his thirst. Over head festoons of innumerable vines, jessamines, and bignonias, link each tree with those around it, their slender stems being interlaced as if in mutual affection. No sooner, in the shade of these beautiful woods, has the traveller finished his mid-day repast, than he perceives small parties of men lightly accoutred, and each bearing an axe, approaching toward his resting place. They exchange the usual civilities, and immediately commence their labours, for they too have just finished their meal.

I think I see them proceeding to their work.

Here two have stationed themselves on the opposite sides of the trunk of a noble and venerable live-oak. Their keen-edged and well-tempered axes seem to make no impression on it, so small are the chips that drop at each blow around the mossy and wide-spreading roots. There, one is ascending the stem of another, of which, in its fall, the arms have stuck among the tangled tops of the neighbouring trees. See how cautiously he proceeds, barefooted, and with a handkerchief round his head. Now he has climbed to the height of about forty feet from the ground; he stops, and squaring himself with the trunk on which he so boldly stands, he wields with sinewy arms his trusty blade, the repeated blows of which, although the tree be as tough as it is large, will soon sever it in two. He has changed sides, and his back is turned to you. The trunk now remains connected by only a thin strip of wood. He places his feet on the part which is lodged, and shakes it with all his might. Now swings the huge log under his leaps, now it suddenly gives way, and as it strikes upon the ground its echoes are repeated through the hummock, and every wild turkey within hearing utters his gobble of recognition. The wood-cutter, however, remains collected and composed; but the next moment, he throws his axe to the ground, and, assisted by the nearest grape-vine slides down and reaches the earth in an instant.

Several men approach and examine the prostrate trunk. They cut at both its extremities, and sound the whole of its bark, to enable them to judge if the tree has been attacked by the white-rot. If such has unfortunately been the case, there, for a century or more, this huge log will remain until it gradually crumbles; but if not, and if it is free of injury or "wind-shakes," while there is no appearance of the sap having already ascended, and its pores are altogether sound, they proceed to take its measurement. Its shape ascertained, and the timber that is fit for use laid out by the aid of models, which, like fragments of the skeleton of a ship, show the forms and sizes required, the hewers commence their labours. Thus, reader, perhaps every known hummock in the Floridas is annually attacked, and so often does it happen that the white-rot or some other disease has deteriorated the quality of the timber, that the woods may be seen strewn with trunks that have been found worthless, so that every year these valuable oaks are becoming scarcer. The destruction of the young trees of this species caused by the fall of the great trunks is of course immense, and as there are no artificial plantations of these trees in our country, before long a good sized live-oak will be so valuable that its owner will exact an enormous price for it, even while it yet stands in the wood. In my opinion, formed on personal observation, live-oak hummocks are *not quite* so plentiful as they are represented to be, and of this, I will give you *one* illustration.

On the twenty-fifth of February, 1832, I happened to be far up the St. John's river, in East Florida, in the company of a person employed by our government in protecting the live-oaks of that section of the country, and who received a good salary for his trouble. While we were proceeding along one of the banks of that most singular stream, my companion pointed out some large hummocks of dark-leaved trees on the opposite side, which he said were entirely formed of live-oaks. I thought differentl and as our controversy on the subject became a li tle warm, I proposed that our men should row us the place, where we might examine the leaves ar timber, and so decide the point. We soon lande but after inspecting the woods, not a single tree the species did we find, although there were thou sands of large "swamp-oaks." My companion a knowledged his mistake, and I continued to searc for birds.

One dark evening as I was seated on the banl of the same river, considering what arrangements should make for the night, as it began to rain in to rents, a man who happened to see me, came up ar invited me to go to his cabin, which he said wa not far off. I accepted his kind offer, and followe him to his humble dwelling. There I found h wife, several children, and a number of men, wh as my host told me, were, like himself, Live-Oaker Supper was placed on a large table, and on bein desired to join the party, I willingly assented, doin my best to diminish the contents of the tin pans an dishes set before the company by the active an agreeable house-wife. We then talked of the cour try, its climate and productions, until a late hou when we laid ourselves down on bears' skins, an preosed till daybreak.

I longed to accompany these hardy wood-cutters t the hummock where they were engaged in prepar ing live-oak timber for a man-of-war. Provide with axes and guns, we left the house to the care c the wife and children, and proceeded for severa miles through a pine-barren, such as I have attemp ed to describe. One fine wild turkey was shot, an when we arrived at the *shantee* put up near the hum mock, we found another party of wood-cutters wai ing our arrival, before eating their breakfast, alread prepared by a negro man, to whom the turkey wa consigned to be roasted for part of that day's dinne

Our repast was an excellent one, and vied with Kentucky breakfast: beef, fish, potatoes, and othe vegetables, were served up, with coffee in tin cups and plenty of biscuit. Every man seemed hungr and happy, and the conversation assumed the mos humorous character. The sun now rose above th trees, and all, excepting the cook, proceeded to th hummock, on which I had been gazing with grea delight, as it promised rare sport. My host, I foun was the chief of the party; and although he als had an axe, he made no other use of it than for strip ping here and there pieces of bark from certain tree which he considered of doubtful soundness. H was not only well versed in his profession, but gen erally intelligent, and from him I received the fol lowing account, which I noted at the time.

The men who are employed in cutting the live oak, after having discovered a good hummock, buil shantees of small logs, to retire to at night, and fee in by day. Their provisions consist of beef, pork potatoes, biscuit, flour, rice, and fish, together wit excellent whiskey. They are mostly hale, strong and active men, from the Eastern parts of the Unior and receive excellent wages, according to their di ferent abilities. Their labours are only of a fev months' duration. Such hummocks as are foun near navigable streams are first chosen, and whe it is absolutely necessary, the timber is sometime hauled five or six miles to the nearest water-cours where, although it sinks, it can, with comparative ease, be shipped to its destination. The best time for cutting the live-oak is considered to be from the first of December to the beginning of March, or while the sap is completely down. When the sap is flowing, the tree is "bloom," and more apt to be "shaken." The white-rot, which occurs so frequently in the live-oak, and is perceptible only by the best judges, consists of round spots, about an inch and a half in diameter, on the outside of the bark, through which, at that spot, a hard stick may be driven several inches, and generally follows the heart up or down the trunk of the tree. So deceptive are these spots and trees to persons unacquainted with this defect, that thousands of trees are cut and afterward abandoned. The great number of trees of this sort strewn in the woods would tend to make a stranger believe that there is much more good oak in the country than there really is; and perhaps, in reality, not more than one fourth of the quantity usually reported, is to be procured.

The Live-Oakers generally revisit their distant homes in the Middle and Eastern districts, where they spend the summer, returning to the Floridas at the approach of winter. Some, however, who have gone there with their families, remain for years in succession; although they suffer much from the climate, by which their once good constitutions are often greatly impaired. This was the case with the individual abovementioned, from whom I subsequently received much friendly assistance in my pursuits.

Audubon.

NATURAL HISTORY.

THE SWORD-FISH.

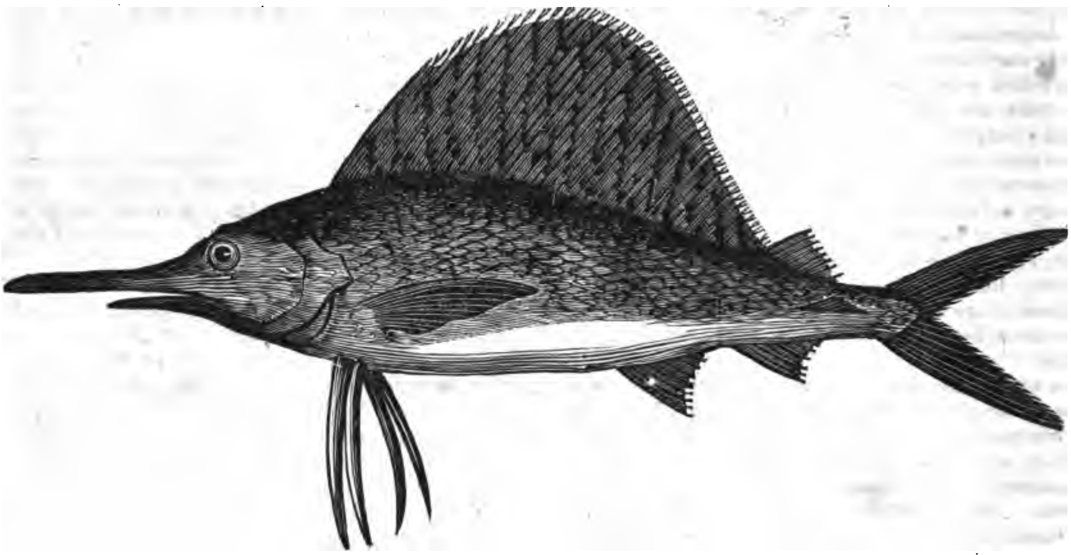
The name of the sword-fish has been given to this singular creature, from the lengthened form of its upper jaw, the extremity of which is prolonged in such a manner as to resemble a sword. In some parts of France it has acquired the name of the emperour, because they say it resembles the Roman emperours, who are represented with a sword in the hand. This fish is extremely large and powerful, being from twelve to eighteen feet in length; of its amazing strength the following anecdote is sufficient evidence:—

Van Schouten, in his voyage round the world about the beginning of the seventeenth century, states that, "a great fish or sea-monster, having a horn like an elephant's tooth, except being full and not hollow, struck the ship with such great strength, that it entered into three planks of the ship, two of green and one of oaken wood, and into a rib, where it turned upward, to their great good fortune."

In the year 1725, in refitting the British ship Leopard after her return from the West Indies, the ship-wrights found in her bottom, part of the sword of one of these fishes. From the direction in which the sword lay, the fish is supposed to have followed the ship when under sail; it had penetrated through the sheathing which was an inch thick, passed through three inches of plank, and beyond that, four inches and a half into the timber. The force requisite to effect this, (since the vessel was proceeding in a direction from the fish,) must have been excessive. The workmen declared it impossible, with a hammer of a quarter of a hundred weight to drive an iron pin, of the same form and size, to the same depth, in less than eight or nine strokes, while this had been effected by only one.

In Europe the chief resort of the sword-fish is the Mediterranean sea, where it is found in great numbers; but although not so plentiful, it is far from an uncommon visiter on the French and Spanish coasts: in the British seas it is seldom met with.

In America the sword-fish is by no means uncommon, on the coast of the Eastern states. The taking of the sword-fish is said to be better sport than that of the tunny. A man in the rigging of the vessel, or on a neighbouring rock, gives notice of its approach; it is then attacked with a small harpoon, attached to a long line. It is, in fact, merely whale



[The Sword-fish.]

fishing in miniature. Sometimes the harpooner has to wait for hours together before it comes in sight. The Sicilian fishermen, who are extremely superstitious, chant a certain ditty, (supposed to be a Greek sentence,) Cuvier, however, says it is an assemblage of words belonging to no language, which they look upon as a charm to attract the sword-fish to their boat. This is the only bait they use; and they pretend that it is most wonderfully efficacious, and obliges the fish to follow them. On the other hand, if unfortunately it should hear them pronounce a single Italian word, it dives at once, and is never heard of again. Oppian speaks of a very singular method of taking these fish, by forming a boat so as to resemble the sword-fish itself for the purpose of deceiving them.

There is at present in the British museum part of the sword of this fish, buried in a piece of wood which once formed part of a vessel; it was broken from the living fish by the violence of the shock, and had penetrated so deeply, that but for this lucky accident the ship would to a certainty have sunk.

To account for this attack on these inanimate masses, it is to be remembered that the sword-fishes naturally waging war with whales, and the larger kinds of *Cetacea*, may very likely mistake the hull of the vessel for the enormous body of one of these huge creatures.

THE MENURA, OR LYRE-TAIL.

The menura, or lyre-tail, a cut of which will be found attached to this article, is a very remarkable species of bird, a native of New Holland, found only in that country, and being the only one of the genus and even the family, as well as only a single species. It belongs, in Cuvier's arrangement, to the dentirostral family of the great order *Passeres*, with which it agrees in the bill being notched, and also in the general form of the legs and feet. But in its air and gait there are some resemblances to the poultry family, though those resemblances are rather slight. They consist in the prevailing teint of the plumage, the short and rounded wings, and the produced feathers in the tail of the male bird. Very little analogy, however, can be founded upon either of those resemblances, and therefore the bird, as we have said, stands alone.

The characters are: The bill broader than high at the base, and triangular in the section there, like the bills of the thrushes. For the greater part of its length the bill is straight, but the point of the upper mandible is hooked, and furnished with a notch on each side. There is a distinct ridge along the culmen of the bill; and the nostrils are placed in the middle of the bill, in prolonged grooves, very large, oval, and partially covered with membrane, which is beset with feathers as in the bills of the jays. The feet are slender, and the tarsus twice as long as the middle toe. The three front toes are of equal length, the internal one free, but the external joined to the middle as far as the first articulation. The claws are nearly as long as the toes, convex on the upper sides, and blunt. The wings are heavy, rounded and concave, the first five quills increasing regularly in length from the first; and the four next them being equal in length, and the longest in the wing. The tail has very long feathers, and in the male those feathers h
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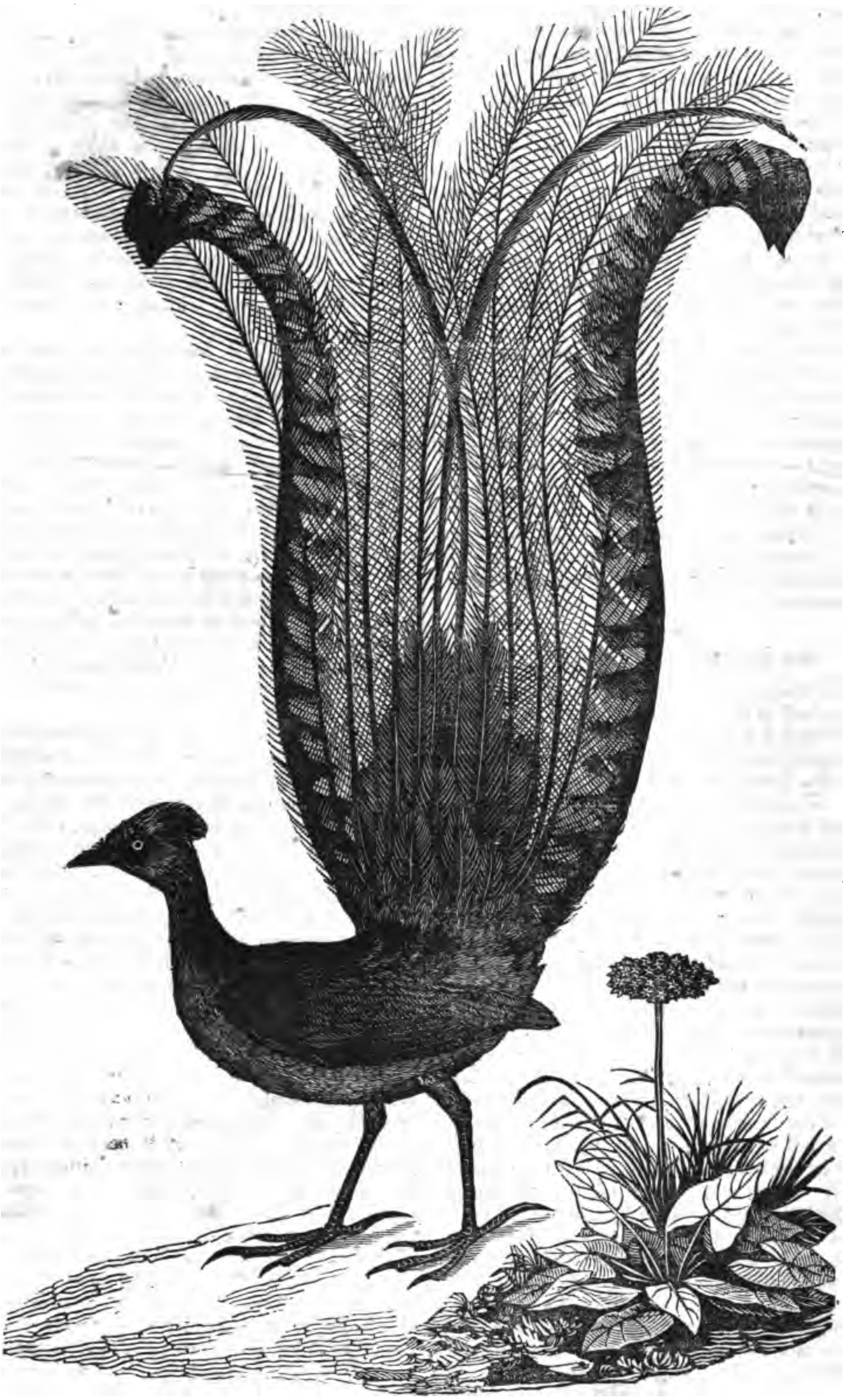

[The Menura, or Lyre-Tail.]

are not often seen, except by those settlers who reside very close on the forests in remote parts of the colony; for though their habit appears to be that of feeding upon the ground only, yet they do not frequent grounds on which there are no trees, the shade of these appearing to be indispensable to them in the heat of the day, as well as during the night. The structure of the bill is decidedly insectivorous or at all events adapted for collecting worms, mollusca, and other small ground animals; and the claws are adapted for scraping, though not so decidedly as those of poultry. In fact the birds, and the country which they inhabit, are both so different from any thing else that we meet with, that they would require to be both carefully examined, in order that any just conclusion might be arrived at respecting the adaptation of each to the other, or the use of the birds in the general economy of nature.

THE VILLAGE PRIZE.

In one of the lovliest villages of old Virginia there lived in the year 175—, an old man, whose daughter was declared, by universal consent, to be the lovliest maiden in all the country round. The veteran, in his youth, had been athletic and muscular above all his fellows; and his breast, where he always wore them, could show the adornment of three medals, received for his victories in gymnastick feats when a young man. His daughter was now eighteen, and had been sought in marriage by many suitors. One brought wealth—another a fine person—another this, and another that. But they were all refused by the old man, who became at last a by-word for his obstinacy among the young men of the village and neighbourhood.

At length the nineteenth birthday of Annette, his charming daughter, who was as amiable and modest as she was beautiful, arrived. The morning of that day, her father invited all the youth of the country to a hay-making frolick. Seventeen handsome and industrious young men assembled. They came not only to make hay, but also to make love to the fair Annette. In three hours they had filled the father's barns with the newly dried grass, and their own hearts with love. Annette, by her father's command, had brought the malt liquor of her own brewing, which she presented to each enamoured swain with her own fair hands.

"Now, my boys," said the old keeper of the jewel they all coveted, as leaning on their pitchforks they assembled round the door in the cool of the evening, "Now my lads, you have nearly all of you made proposals for my Annette. Now, you see, I don't care anything about money or talents, book larning nor soldier larning—I can do as well by my gal as any man in the country.—But I want her to marry a man of my own grit. Now, you know, or ought to know, when I was a younster I could beat anything in all Virginny in the the way o' leaping. I got my old woman by beating the smartest man on the Eastern Shore, and I have took the oath and sworn it, that no man shall marry my daughter without jumping for it. You understand me, boys. There's the green, and here's Annette," he added, taking his daughter,
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Carroll. He ought to beat this;" and every one appeared, as they called to mind the mutual love of the last competitor and the sweet Annette, as if they heartily wished his success.

Henry stepped to his post with a firm tread. His eye glanced with confidence around upon the villagers and rested, before he bounded forward, upon the face of Annette, as if to catch therefrom that spirit and assurance which the occasion called for. Returning the encouraging glance with which she met his own, with a proud smile upon his lip, he bounded forward.

"Twenty-one feet and a half!" shouted the multitude, repeating the announcement of one of the judges, "twenty-one feet and a half. Harry Carroll forever. Annette and Harry." Hands, caps, and handkerchiefs waved over the heads of the spectators, and the eyes of the delighted Annette sparkled with joy.

When Henry Carroll moved to this station to strive for the prize, a tall, gentlemanly young man, in a military undress frock coat, who had rode up to the inn, dismounted and joined the spectators, unperceived, while the contest was going on, stepped suddenly forward, and with a knowing eye measured deliberately the space accomplished by the last leaper. He was a stranger in the village. His handsome face and easy address attracted the eyes of the village maidens, and his manly and sinewy frame, in which symmetry and strength were happily united, called forth the admiration of the young men.

"Mayhap, sir stranger, you think you can beat that," said one of the bystanders, remarking the manner in which the eye of the stranger scanned the arena. "If you can leap beyond Harry Carroll, you'll beat the best man in the colonies." The truth of this observation was assented to by a general murmur.

"Is it for mere amusement you are pursuing this pastime?" inquired the youthful stranger, or is there a prize for the winner?"

"Annette, the loveliest and wealthiest of our village maidens, is to be the reward of the victor," cried one of the judges.

"Are the lists open to all?"

"All, young sir?" replied the father of Annette, with interest, his youthful ardour rising as he surveyed the proportions of the straight limbed young stranger. "She is the bride of him who outleaps Henry Carroll. If you will try you are free to do so. But let me tell you, Harry Carroll has no wife in Virginia. Here is my daughter, sir, look at her and make your trial." The officer glanced upon the trembling maiden about to be offered on the altar of her father's unconquerable monomania with an admiring eye. The poor girl looked at Harry, who stood near with a troubled brow and angry eye, and then cast upon the new competitor an imploring glance.

Placing his coat in the hands of one of the judges, he drew a sash he wore beneath it tighter around his waist, and taking the appointed stand, made, apparently without effort, the bound that was to decide the happiness or misery of Henry and Annette.

"Twenty-two feet and an inch!" shouted the judge. —The announcement was repeated with surprise by the spectators, who crowded around the victor, filling the air with congratulations, not unmingled, however, with loud murmurs from those who were more nearly interested in the happiness of the lovers.

The old man approached, and grasping his hand exultingly, called him his son, and said he felt prouder of him than if he were a prince. Physical activity and strength were the old leaper's true patents of nobility.

Resuming his coat, the victor sought with his eye the fair prize he had, although nameless and unknown, so fairly won. She leaned upon her father's arm, pale and distressed.

Her lover stood aloof, gloomy and mortified, admiring the superiority of the stranger in an exercise in which he prided himself as unrivalled, while he hated him for his success.

"Annette, my pretty prize," said the victor, taking her passive hand—"I have won you fairly." Annette's cheek became paler than marble; she trembled like an aspen leaf, and clung closer to her father, while the drooping eye sought the form of her lover. His brow grew dark at the stranger's language.

"I have won you, my pretty flower, to make you a bride!—tremble not so violently—I mean not myself however proud I might be," he added with gallantry, "to wear so fair a gem next my heart. Perhaps," and he cast his eyes round inquiringly, while the current of life leaped joyfully to her brow, and a murmur of surprise ran through the crowd—"perhaps there is some favoured youth among the competitors, who has a higher claim to this jewel.—Young sir," he continued, turning to the surprised Henry, "methinks you were victor in the list before me—I strove not for the maiden, though one could not well strive for a fairer—but from love for the manly sport in which I saw you engaged. You are the victor, and as such, with the permission of this worthy assembly, receive from my hand the prize you have so well and so honourably won."

The youth sprang forward and grasped his hand with gratitude, and the next moment Annette was weeping from pure joy upon his shoulders. The welkin rung with the acclamations of the delighted villagers, and amid the temporary excitement produced by this act, the stranger withdrew from the crowd, mounted his horse, and spurred at a brisk trot through the village.

That night, Henry and Annette were married, and the health of the mysterious and noble-hearted stranger, was drunk in overflowing bumpers of rustic beverage.

In process of time, there were born unto the married pair sons and daughters, and Harry Carroll had become Colonel Henry Carroll of the revolutionary army.

One evening, having just returned home after a hard campaign, he was sitting with his family on the gallery of his handsome country-house, when an advance courier rode up and announced the approach of General Washington and suite, informing that he should crave his hospitality for the night. The necessary directions were given in reference to the household preparations, and Colonel Carroll, ordering his horse, rode forward to meet and escort to his house the distinguished guest, whom he had never yet seen, although serving in the same widely extended army.

That evening, at the table, Annette, now become the dignified, matronly, and still handsome Mrs. Carroll, could not keep her eyes from the face of her illustrious visitor. Every moment or two she would steal a glance at his commanding features, and half-doubtingly, half-assuredly, shake her head and look again, to be still more puzzled. Her absence of mind and embarrassment at length became evident to her husband, who inquired affectionately if she were ill?

"I suspect, colonel," said the general, who had been some time, with a quiet, meaning smile, observing the lady's curious and puzzled survey of his features—"that Mrs. Carroll thinks she recognizes in me an old acquaintance." And he smiled with a mysterious air, as he gazed upon both alternately.

The colonel stared, and a faint memory of the past seemed to be revived as he gazed, while the lady rose impulsively from her chair, and bending eagerly forward over the tea-urn, with clasped hands and an eye of intense, eager, inquiry, fixed full upon him, stood for a moment with her lips parted as if she would speak.

"Pardon me, my dear madam—pardon me colonel—I must put an end to this scene. I have become, by dint of camp-fare and hard usage, too unwieldly to leap again twenty-two feet one inch, even for so fair a bride as one I wot of."

The recognition, with the surprise, delight and happiness that followed, are left to the imagination of the reader.

General Washington was indeed the handsome young "leaper," whose mysterious appearance and disappearance in the native village of the lovers, is still traditionary—and whose claim to a substantial body of *bona fide* flesh and blood, was stoutly contested by the village story-tellers, until the happy denouement which took place at the hospitable mansion of Colonel Carroll.

ARCHITECTURE.

The Ionic Order. The account of this order, which is given by Vitruvius, informs us, that in a general assembly of the Grecian states, thirteen colonies were sent over into Asia, by the Athenians; the expedition being led by Ion, whom the Delphic oracle which directed the emigration had acknowledged for the offspring of Apollo. They settled on the borders of Caria, and built several cities of great fame of which were Ephesus, Miletus, Samos, and Colophon, to which Smyrna was afterwards added: and after the expulsion of the original inhabitants, these colonies were denominated Ionian, from the name of their chief. "In this country," continues he, "allotting different sites to sacred purposes, they erected temples, the first of which was dedicated to Apollo Panionius. It resembled that which they had seen in Achaia, and, from the species having been first used in the cities of Doria, they gave it the name of Doric. As they wished to erect this temple with columns, and were not acquainted with their proportions, nor the mode in which they should be adjusted, so as to be both adapted to the reception of the superincumbent weight, and to have a beautiful effect, they measured a man's height by the length of the foot, which they found to be a sixth part thereof, and thence deduced the proportion of their columns. Thus the Doric order borrowed its proportion, strength, and beauty from the human figure. On similar principles

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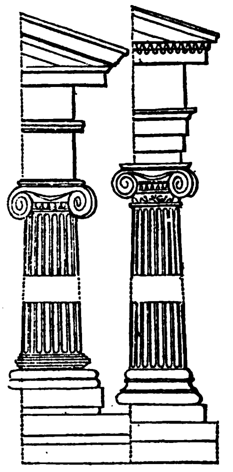
cult to give the preference to either. We shall therefore describe both. The temple on the Illyssus is the plainer of the two: its volute consists of a single spiral with a deep channel between, and is separated from the shaft by the sculptured echinus. The architrave is not broken into fasciæ, as in most other specimens. The cornice consists simply of a square member, with an echinus and fillet surmounted by the cymatium: the bed-mouldings in the elevation are completely concealed. The base is composed of two tori, the upper of which is channelled horizontally, and surmounted by a bead, inclosing a very flat scotia, the upper fillet of which projects as far as the extremity of the torus. The flutes are semi-elliptic.



The following are the measures of this order, of which specimens are shown in the engraving. The column, including base and capital, sixteen modules, fourteeen minutes and one-fifth; the base, twenty-nine minutes and four-fifths; the capital (to bottom of volute), forty minutes. The architrave, fifty-five minutes and two-fifths; the frieze, forty-nine minutes; the cornice, thirty minutes and one-fifth. Width of the capital, three modules, three minutes; upper diameter of column fifty-one minutes. Intercolumniation from centre to centre of column six modules, five minutes and two-fifths.

The specimens furnished in the temple of Minerva Polias are next to be considered. This example is much richer, yet no less elegant than the other: the volute instead of a single spiral, is formed by three: the sculptured echinus beneath is surmounted by a guilloched moulding, and separated from the shaft by a neck adorned with honey-suckles. The base is very similar to that of the temple on the Ilyssus, except that its beauty is increased by the diminution of its height, the scotia is deeper, and the upper torus is guilloched. The architrave consists of three fasciæ, and the cornice is similar to that of the Illyssus temple, except that the echinus and bed-moulding are sculptured, and the astragal of the latter is seen in the elevation beneath the corona.

The column, including base and capital, is eighteen modules, seven minutes and one-tenth in height; the base, twenty-four minutes; and capital, forty-two. The architrave, forty-five minutes and one-fourth; the frieze forty-seven minutes and four-fifths; and cornice (to the fillet of the echinus, which is the greatest *actual* height of the entablature, the cymatum being a restoration,) twenty minutes and two-fifths. The width of the capital, three modules, three minutes. Upper diameter of column, forty-nine minutes and a half. Intercolumniation (from centre to centre), nine modules. Both these orders e destitute of insulated plinths.

Iaving thus given our readers an idea of the finest eek specimens of this order, we must now proceed the Roman and Italian version of it. It is the culiarity of this order, that its front and side faces are dissimilar. To obviate this inconvenience, the Greeks twisted the extreme volutes of a portico so as to make the two faces alike. But Scamozzi, a famous Italian architect, designed a capital in which the volutes proceeded angularly from the shaft, thus presenting the same front every way; and the capital so executed has been generally attributed to the supposed inventor. Sir William Chambers, however, is of opinion that Michael Angelo was the author of one of this description, in the Vatican at Rome. This capital is commonly known as the modern Ionic, but has not been often executed in large works. The freize of this order has been, by many architects, and Palladio among the number, pulvinated, or rounded in its contour, and smaller than the architrave, as though it were pressed down and bent by the superincumbent weight; but the ill effect of this has been so generally perceived, that it is rarely to be seen in late works. The cornice is distinguished from the Greek by its variety of mouldings, among which the most remarkable is a square member in in the bead-mouldings, cut into small divisions, somewhat resembling teeth, whence they are called *dentils* In other points of variation between the Grecian and Roman architecture there may be a difference of opinion; but with respect to the Ionic capital, we conceive this to be impossible. Whoever compares the meager, petty form of the capital of the temple of Concord, with that of the Erectheion, must instantly, whatever be his former prejudices, perceive the amazing difference, and unhesitatingly acknowledge the vast superiority of the latter. The poverty of the solitary revolving fillet, the flat, insipid lines, and the enormous projection of the clumsy echinus, combine to render this the very worst feature in all the Italian orders. The base commonly used is the Attic, though Vitruvius has appropriated one to this order, resembling the Corinthian without its lower torus.

The following are the measures of the order from Sir William Chambers: The base, one module: the shaft, sixteen modules nine minutes; and capital, twenty-one minutes. The architrave, forty minutes and a half; the frieze, the same; and cornice, fifty-four minutes. Width of capital, two modules, twenty-six minutes. Upper diameter of column fifty minutes.

"As the Doric order," says Sir William Chambers, "is particularly affected in churches or temples dedicated to male saints, so the Ionic is principally used in such as are consecrated to females of the matronal state. It is likewise employed in courts of justice, in libraries, colleges, seminaries, and other structures having relation to arts or letters; in private houses, and in palaces; to adorn the women's apartments, and says Le Clerc, in all places dedicated to peace and tranquility. The ancients employed it in temples sacred to Juno, to Bacchus, to Diana, and other deities whose characters held a medium between the severe and the effeminate."

(To be continued.)

The greatest flood has the soonest ebb; the most violent tempest the most sudden calm; the hottest love the coldest end; and from the deepest desire oftentimes ensues the deadliest hate. A wise man had rather be envied for providence, than pitied for prodigality. Revenge barketh only at the stars, and spite spurns at that she cannot reach.

POPULAR MEDICAL OBSERVATIONS.

AIR, LIGHT, CLEANLINESS, CLOTHING.

A function or process, in its nature resembling what we call respiration or breathing, is performed by all living beings. Even plants breathe, and their leaves are the organs by which their respiration is performed. Polypi, of which you have an example in the gelly fish, and zoophites, of which you may take sponge for an example, which constitute the lowest links in the chain of animals, perform this function by the whole of their exposed surfaces; but in all animals higher than these, there is a special apparatus for this purpose. In those which live in the water we find various modifications of gills. Thus, in the lobster and crab, which belong to a class of animals called crustacea, you know there are spongy bodies called by some persons *dead men's flesh.* The oyster, which belongs to another class of animals, called molusca; breatnes by means of that part which resembles a fringe, and is called the beard; while in the true fish, such as the herring and the shark, we find for the same purpose those parts which are generally known by the name of gills; but even in these there is some variety. On the other hand, those animals which either live in air, or at least breathe it, are provided with lungs, or with organs bearing some resemblance to them. The snail, which I mention as a specimen of the soft animals, or molusca living in air, has a kind of lung. The caterpillar, and the animals allied to it, of the insect class, are furnished with two tubes, one on each side of the body, for the reception of air, which finds its way into and out of them by two corresponding rows of small pipes or pores called stigmata. Frogs, turtles, serpents, and other reptiles, have regular lungs but of a coarse texture; birds breathe by means of lungs of a fine texture, which have as accessories various large cavities which receive air from the lungs.

Man, as you know, and those animals which belong to the same class with him, breathe by means of very perfect lungs, which occupy a considerable part of the trunk. The air enters them by the windpipe; this divides, and its branches again and again divide and sub-divide, till its small and delicate branches have conveyed the air into the soft and spongy structure of the lung, in which it is brought into intimate contact with the organ. In man, and in those animals which resemble him in their mode of breathing, the process of respiration is partly *mechanical* and partly *chymical.*

The mechanical part consists in the admission of air by the *expansion* of the cavity, which is brought about by the raising of the ribs, and the descent of the diaphragm or midriff, and in the expulsion of the air when the capacity of the chest is diminished by the falling of the ribs and the raising of the diaphragm. In its passage between the mouth and lungs, the air may be stopped at a narrow part, a little behind the tongue, called the *rima glottidis.* This may happen at our own will, or at times by serious or even fatal accident. The air, as it is put in motion in the lungs, by the act of taking in and sending out breath, produces a sound which may be heard through the ribs, and which differs in the healthy and the diseased states of the lung. On this fact is founded the use of the cylinder or stethoscope, an instrument of great advantage in the investigation of the diseases of the chest.

The chymical part of the process consists chiefly in the loss of oxygen gas, and the formation of carbonic acid gas: the one is generally equal to the other. There is, however, some difference in this respect between summer and winter. Sometimes there is not merely a loss of a part of the oxygen in the respired air: the quantity of the azote, the other component part of the atmosphere, may likewise be altered; this seems to depend on the season of the year, and on the state of the animal, and particularly on the situation in which it had been placed previously to the examination. The number of respirations per minute varies in different persons, and also in the same person at different times. The mean may be stated at twenty. About one-eighth of the air in the chest is changed in each ordinary act of respiration and inspiration, and on an average 666½ cubick feet of air are breathed in twenty-four hours.

The general conviction of the close connexion between breathing and life is shown by the expressions "breath of life," "breathing one's last," "expiring," and the like. The absolute necessity for the constant performance of the changes effected by respiration, is fully demonstrated by experiments on animals which perform the function in water, as well as on those which breathe air. Thus fish die in limited quantities of water, if contact with air be prevented, and the effect will be more striking if the air contained in water have been expelled by boiling.

We need not, then, be surprised at the serious and not unfrequently fatal consequences of those circumstances which interfere with respiration. I shall notice these under different heads.

1. Man or any other animal may die from having only a limited quantity of air, which he contaminates himself, and renders unfit for the purposes of life: as when a small animal is placed under a receiver, or when human beings have been confined in air-tight chambers, cases of which kind have occurred in mines on the irruption of water. As our rooms are not air-tight, it is rare for immediately fatal effects to proceed from the contamination of the air in them by means of the continued respiration of the same portion, yet instances have occurred of persons perishing from close crowding in a confined apartment, of which few instances are more fatal or striking than the case of the Englishmen confined in the Black-Hole at Calcutta. This was in 1775, when the Indian Nabob Surajah Dowla, consigned 146 prisones to the dungeon so named.

"It was about eight o'clock when these unhappy persons, exhausted by continual action and fatigue were crammed together into a dungeon about eighteen feet square, in a close sultry night, in Bengal, shut up to the east and south, the only quarters whence the air could reach them, by dead walls, and by a wall and door to the north; open only to the west by two windows strongly barred with iron, from which they could receive scarce any circulation of fresh air.

"They had been but a few minutes confined before every one fell into a perspiration so profuse, that no idea can be formed of it. This brought on a raging thirst, which increased in proportion as the body was drained of its moisture. Various expedients were thought of to give more room and air. Every man was stripped, and every hat put in motion They several times sat down on their hams, but at each time several of the poor creatures fell, and were instantly suffocated or trodden to death.

"Before nine o'clock every man's thirst grew intolerable, and respiration difficult. Efforts were again made to force the door, but still in vain. Many insults were used to provoke the guards to fire upon the prisoners, who grew outrageous, and many of them delirious. 'Water, water,!' became the general cry. Some water was brought, but these supplies, like sprinkling water on fire, only served to raise and feed the flames. The confusion became general and horrid from the cries and ravings for water, and some were trampled to death. This scene of misery proved entertainment to the brutal wretches without, who supplied them with water that they might have the satisfaction of seeing them fight for it, and held up lights to the bars that they might lose no part of the inhuman diversion.

"Before eleven o'clock most of the gentlemen were dead, and one third of the whole. Thirst grew intolerable; but Mr. Holwell kept his mouth moist by sucking the perspiration out of his shirt-sleeves, and catching the drops as they fell like heavy rain from his head and face. By half an hour after eleven most of the living were in an outrageous delirium. They found that water heightened their uneasiness, and 'Air, air!' was the general cry. Every insult that could be devised against the guard; all the opprobrious names that the viceroy and his officers could be loaded with, were repeated to provoke the guard to fire upon them. Every man had eager hopes of meeting the first shot. Then a general prayer to heaven to hasten the approach of the flames to the right and left of them, and put a period to their misery. Some expired on others; while a steam arose, as well from the living as the dead, which was very offensive.

"About two o'clock in the morning they crowded so much to the windows, that many died standing, unable to fall by the throng and equal pressure round. When the day broke, the stench arising from the dead bodies was insufferable.

"At that juncture, the soubah, who had received an account of the havock death had made among them, sent one of his officers to inquire if the chief survived. Mr. Holwell was shown to him; and it was near six when an order came for their release.

"Thus they had remained in this infernal prison from eight at night until six in the morning, when the poor remains of one hundred and forty-six souls, being only twenty-three, came out alive, but most of them in a high putrid fever."

In large assemblies, collected in disproportionately small or ill-contrived rooms, a slighter degree of the same inconvenience is felt, and the accumulation of heat adds to the evil. The lights if there be any present, burn dimly—the robust are oppressed, and those less able to bear the altered state of the air, faint.

From the extent to which the air of an apartment may be changed, through very small crevices, it seldom happens that the diminution of oxygen, or the excess of carbonic acid, produced by the respiration of human beings, is sufficient to lead to any very serious contamination of the air.

Less degrees of it escape attention, yet the constant, or frequently-repeated application of the cause, cannot fail to produce injurious effects. Nor can I doubt that the unhealthy appearance of the poor, who happen to have large families, crowded into small and ill-contrived chambers, and more especially the sickly state of their children, *in part* originate in its agency.

The means of preventing or remedying the evils to which I have alluded, must naturally present themselves, on the consideration of the causes giving rise to them; and you will, perhaps, say that I might as well spare you the trouble of listening to a relation of deficiencies produced by the severe and resistless force of poverty, rather than proceeding from ignorance or negligence. Personal observation, however, has convinced me that, in this, as in many other instances, evils are allowed to pass unheeded, or are tamely submitted to, not because they are concealed, or trifling, but, on the contrary, because their general and frequent occurrence, has rendered them familiar. Thus a room is sometimes rendered insufferably close, in consequence of a window, which ought to let in air as well as light, not being so constructed as to allow of its being opened, although the occupier, with a little pains and ingenuity, might make it do so, by giving a small portion of time to it, before or after work, supposing that he may not have the means to get it done by another. Sometimes a window, which might be opened, is kept close to avoid the draught, although a little management might protect the inmates from this inconvenience. Sometimes a chimney, which is scarcely less useful as a ventilator, than as a part of the fire-place, is either blocked up or wholly wanting. These are defects, for which the greatest poverty can hardly be urged in defence, and those who let apartments to the poor, and more especially those who contrive or construct dwellings for their reception, should be careful to observe and avoid them.

POETRY.

THE SEA CAPTAIN—Brainard.

Solemn he paced upon that schooner's deck,
And muttered of his hardships:—"I have been
Where the wild will of Mississippi's tide
Has dashed me on the sawyer; I have sailed,
In the thick night, along the wave-washed edge
Of ice in acres, by the pitiless coast
Of Labrador; and I have scraped my keel
O'er coral rocks in Madagascar seas:
And often, in my cold and midnight watch,
Have heard the warning voice of the lee shore
Speaking in breakers! Ay, and I have seen
The whale and sword-fish fight beneath my bows
And, when they made the deep boil like a pot,
Have swung into its vortex; and I know
To cord my vessel with a sailor's skill,
And brave such dangers with a sailor's heart:—
But never yet, upon the stormy wave,
Or where the river mixes with the main,
Or in the chafing anchorage of the bay,
In all my rough experience of harm,
Met I—a Methodist meeting-house!*

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Cat-head, or beam, or davit has it none
Starboard nor larboard, gunwale, stem nor stern!
It comes in such a "questionable shape,"
I cannot even *speak* it. Up jib, Josey,
And make for Bridgeport! There, where Stratford Point,
Long Beach, Fairweather Island and the buoy,
Are safe from such encounters, we'll *protest!*
And Yankee legends long shall tell the tale,
That once a Charleston schooner was beset,
Riding at anchor, by a meeting-house!

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* The Bridgeport paper of March, 1823, said: "Arrived, schooner Fame, from Charleston, via New London. While at anchor in that harbour, during the rain storm on Thursday evening last, the Fame was run foul of by the wreck of the Methodist meeting-house from Norwich, which was carried away in the late freshet."

CONCHOLOGY.

(Continued.)

Shells are abundantly distributed over every part of the globe, from the polar regions to the torrid and inter-tropical zones, increasing in number, size and colour, as they recede from the one and approximate the other, a fact equally to be observed in the other works of creation. Heat and light, as we shall hereafter explain, possess such a prodigious influence on these productions, that the most beautiful, whether marine or terrestrial, are those inhabiting tropical climates. It may be said that no part of the world is divested of shells, either terrestrial marine, or fluviatile, and the number of their species is always proportioned to the extent of their peculiar location or habitat; we may also ascertain that nearly all the families exist in the different zones of the globe, though the genera and species of some are far more numerous in one zone than in the other. To attempt a detailed account of the geographical localities of the different genera, would not only be extremely difficult, if not totally impracticable, but would occupy a larger space than can conveniently be allotted to the subject in a work like the present one.

We will, nevertheless, point out a few leading facts with regard to the habitat of shells, which will serve as a general illustration of the localities of their congeners. In the high northern latitudes shells are not numerous, and the species most usually found are of the genera *Terebratula*, *Mya*, *Pandora*, and some of the *Solens;* they are not, however, equally abundant in all the northern seas. The *Ostrea*, *Aviculo*, *Orbiculo*, *Crania*, *Terebratula*, *Haliotis*, *Pecten*, *Patella*, *Arca*, *Lima*, *Mactra*, *Pholas*, *Balanus*, *Cardium*, *Teredo*, and *Helix*, are everywhere found in greater or smaller numbers, as the degree of latitude varies; the *Clavagella*, *Aspergillum, and Fistulana*, appear confined to the equatorial zones; the *Vulsella*, *Pernu*, *Chama*, *Crenatula*, *Trigonia*, and some of the *Cardia*, inhabit the southern zones; the *Harpa*, *Terebra*, *Cassis*, *Pleurotoma*, *Mactra*, *Strombus*, *Conus*, *Oliva*, *Ovula*, *Cypræa*, &c., principally inhabit the inter-tropical regions; the *Tridacna* has not yet been met with anywhere than in the Indian archipelago: the *Argonauta*, *Nautilus*, and *Spirula*, mostly dwell in the torrid zone. With respect to terrestrial species of shells, it may be observed generally, that they are more numerous—higher coloured, and of a larger growth, in the southern and eastern regions, than in the northern and inter-tropical. Our *Helix nemoralis*, field snail, is, however, a remarkable exception, as its colours vie with those of its congeners in any other country, and in point of size, some species of European *Helix* exceed those of the warmer latitudes; the *Testacella* may be said to live almost underground; and hot springs, and the bituminous waters of the Dead Sea, are not without testaceous inhabitants. Extremely interesting conclusions will, sooner or later, be drawn as the science of malacology becomes better understood; respecting the diminution of species, the limits of their variations, and to what extent the individuals are modified by local circumstances in the places they inhabit. Many shells are of a very large size, while others are invisible to the eye. In the formation and arrangement of collections of shells, merely as objects of natural beauty, they cede to no portion of nature's productions; and, unlike every other branch, they possess this immense superiority, that with a very moderate degree of care, they may be preserved comparatively uninjured for centuries, losing nothing of their substance, and but little of their colour.

It being demonstrable that shells are formed on the model or naked body of the animal constructing them, every portion or inequality of surface these bodies present must necessarily cause either depressions or protuberances on the exteriour of their shells corresponding with them; whereas, in the simple snail, these do not exist, or in other shells which have only little elevated knobs, or regular grooves, bands &c., we easily may conceive how the surface of the shell corresponds with the exteriour of the animal's body; and when we examine shells constructed like the *Scalaria pretiosa* (Wentletrap), or the *Harpa* (Harp), and others of a similar character, we observe the covering of an animal whose periodical increase is distinctly marked by the lip or termination of each addition to its original size. This forms what may, for the sake of description, be termed ribs, when placed longitudinally from the apex to the base, as in the *Harpa*, or rings, as in the *Scalaria;* and here we only want the opportunity of ascertaining the time occupied in constructing each of these additional portions, to determine the age of the shell. This remark also applies both to bivalve and univalve shells. But when we examine a shell set with spines, or foliated processes, we for a moment hesitate to believe that such was formed in the animal's body; and here the exercise of common sense is necessary to explain, in the absence of the animal, that which appears inconsistent with the theory laid down; our reasoning faculties are called into action, and we observe, that in the early stage of growth, many species of shells differ widely from their mature formation, many instances of which may be named in the genera *Strombus*, *Pteroceras*, *Ranella*, *Cypræa*, &c., not to mention numerous bivalve shells whose valves are variously provided with spines arched scales, &c. When such are met with, it is obvious that their formation has been caused by the necessity the animal feels of having certain corresponding organs protected, either wholly or partially. In the first period of growth, these organs, not having reached the full term of their development, the shelly matter extended no further than was required, for nature, in her operations, never squanders the materials she employs to carry them into effect; she always adopts the shortest way of going to work, having no ulteriour object to guide her course than necessity; but that hard taskmaster never drives her from an uniform progress. Combined with the strictest economy both of time and matter, everything in creation hastens on, by regular stages, to its utmost state of perfection or maturity—there stops—ever after sinking into gradual decay. The purposes of its animal existence daily become more feeble, till they are altogether extinguished by death. Thus, in the genera we have just named, the claws, spiny processes, or terminal bands, could not have been formed from a calcareous deposit on the body of the animal, properly so called; but we can easily account for their formation, particularly if we have the advantage of examining the young and the adult shell at the same time. In the *Pteroceras*, for example, the young shell instead of the elongated points, has open, waved prolongations, which, as the organs they then covered increase in length, become lengthened, and finally closed altogether, as the animal, after attaining its maturity, finds it no longer necessary to go on building, but then retreats into its dwelling; and the very organs most serviceable to complete it not being any longer in constant action cease to grow, and, on the contrary, diminish in size, and very frequently disappear altogether. In other genera, the *Murex*, &c., we see regularly-formed sets of spines, or foliations, at given intervals, round the spiral form of the shell. Each of these, it is quite clear, formed previous terminations, and became successively closed as the increased size of the animal required more room.

These additions go on with the greatest regularity, and correspond accurately in all the species, with the exception of some few, which may be considered sports of nature, and not generic distinctions. By counting these periodical additions, we come to the same conclusion regarding their age as with the Wentletrap. We can indeed say that such a shell is not an adult one, by counting the number of varices but it has not yet been determined what period of time is necessary to complete the standard measure. *Helices*, and their congeners, never form a thickened lip until their full growth is attained. Double-lipped shells have been described, but they are extremely rare. We shall point out the mode adopted by nature in forming the snail shell, in which it will be seen, as before stated, that it is formed on the animal's body. It is equally certain, though not so easily proved by observation, that those shells which have claws, as they are termed, such as the *Pteroceras* present, or foliations or spines, as the *Murices* exhibit, must depend wholly on the form of the skin of the mantle and its age, by means of which these were formed, its lobes, prolongations of portions of the mantle, the organs of respiration, the head, oviduct, &c.; each producing, by their habitual uses, the spines, claws, canals, and other parts of the external covering of the animal. If the edges of the mantle of the animal are even, the termination of the shell is the same; if waved, so is the external edge. Where digitations of the mantle exist, they are equally protected, and become as we have stated, claws of spines; tubular in their early growth, but rendered solid by repeated deposits of testaceous matter, exuding from the mantle in certain proportions, till the period of its full maturity. The animal then declines; its dwelling is sufficient for the protection of its body; the wants of its life in seeking food, or in moving from one spot to another, during the completion of its growth, require an extension of those parts, at first but slightly defined, and they are not in the full exercise of their adult functions; but these extended organs in youth are much greater in proportion, and frequently more numerous, than they are in the stage of decrepitude, when they begin to disappear, and the activity of their offices gradually decline, being no longer required to complete most of their destined operations. As a general deduction, we repeat, it appears quite certain that the spines, tubercles, and claws of shells, however solid they may be met with, have all of them, at first, been channelled or grooved, to defend certain exposed organs in those which have the canal or slit on the under side, and they are by far the most numerous, having been produced by the digitations of the mantle; while those which have the slit on the upper side, as in the *Purpura* and *Venus Dione*, (Linnæus) appear on the contrary, to have been produced by the concavity of an appendage to the mantle, which projected on the outside.

Nothing certain appears known of the age of shells, though we have just remarked that certain stages of growth are marked by signs of the shell being then finished; their growth probably in many species, under favourable circumstances of climate and food, continues for a definite period; with regard to the animal, whose increase of bulk requires increased accommodation in its shell, as would appear particularly in the genera we have already named, and in all the other genera whose varices, whether spinous or foliaceous, seem placed at stated intervals, some being found at the half turn of the whole circumference of the shell, others at a quarter, some one third, and some perpendicular, to the base; others at the sides of the shell, giving it a flattened or ventricose appearance, according to the position of these previous terminations, which, it must be again observed, are formed of the vitreous, and not lamellar substance. In bivalve shells, also, the period of growth may be traced by their striæ, and they seem also to have a limited extent of increase, as, generally speaking, the various genera attain a tolerably uniform size. Their age is, however, more strongly marked by the thickness of the valves, and the internal muscular impressions, than any other guide. The valves of shells having a continual tendency to fly open, in consequence of the elastic ligament situated at the side of the hinge, which operates as a muscle, it was necessary that the animal inclosed should have the power of closing them at pleasure. There are, therefore, according to the different genera, always one or two muscles fitted for this purpose. In the oyster there is only one muscle of this kind, situated near the centre of the shell, behind the liver, and in the middle of the cloak. It is inserted into both valves, and by its contraction brings them together with an astonishing force, equal to the pressure of many hundred pounds weight. The same mechanism prevails in the *Perna*, *Avicula*, and *Spondylus*. In young shells these muscles leave a fainter impression than in old ones, in which the increased substance of the valves render them deeper. They are, as it were, always advancing more towards the edge of the valves, not that these muscles are ever displaced entirely, but new portions of them are formed as the animal finds it necessary to occupy a convenient position in its dwelling; the posterior parts of the muscle become inactive, and die away, whilst others replace them on the anterior part, and so on during the life of the animal. These muscular impressions also afford an excellent guide to the genus of animal to which the shell belongs, where no other opportunity presents itself of judging. The difference which exists in the size of shells of the same species, particularly in such as have not the strongly marked lip, or other final termination, is very remarkable. It does not appear easily accounted for, but a similar anomaly exists in every branch of natural history; and it may therefore be attributed chiefly to the strength and constitution of the animal, being always proportioned to the favourable or unfavourable situation of its habitat, and the goodness of its nourishment in peculiar situations. Another extraordinary occurrence is, the elongation of the spires of some univalve shells, in which the whorls do not touch each other, but appear drawn out like a coiled spring. The *Scalaria* and *Helix* are those in which that lussus has been observed, though it is very rare; but the greatest monstrosity of all, the most inexplicable freak of nature, is displayed in such shells as are sinister or heterostrophe, that is, having their whorls turned to the left instead of the right. This can only be accounted for by the viscera of the animal presenting a change in their position, which of course is followed in the formation of the shell, this is to be understood, but the former baffles inquiry. Such a phenomenon might therefore occur in every species of mollusc, and does so in numerous instances; but some of the genera, particularly of terrestrial shells, are more commonly left-handed than on the contrary. These, however, do not, in the opinion of the author of this article, constitute anything beyond a variety or sport of nature, though constantly occurring in some genera.

(To be continued.)

CHINESE BOOKSELLER.

The almost infinite number of characters in the Chinese language (of which there are 80,000) renders the study of their literature, extremely difficult: hence literary acquirements in that country, are considered as indicating great intellectual capacity, and all those devoted to belles-lettres, are regarded with marked respect. This esteem is extended to those who are in any manner connected with literature, not

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[Chinese Bookseller.]

The Chinese bookseller, as represented in our engraving, has no store, but carries his books about with him.

The Chinese do not write with pens, but with sable pencils. Their escritoire is made of a piece of polished marble, in the ends of which are holes for the cakes of ink, and for water: the cake of ink is moistened and rubbed against the marble until it becomes liquid and fit for use. The brush, ink, paper, and marble are designated by a simple word which signifies the *four precious things*.

USEFUL ARTS.

PLUMBERY.

PLUMBERY is the business of an artisan who is chiefly engaged in the manufacture and useful employment of lead, a metal of the greatest importance in the domestick arts.

The plumbers use lead in sheets, and of these they have two kinds, one of which they call *cast* and the other *milled lead*. The cast lead is used for the purpose of covering the flat roofs of terraces of buildings, forming gutters, lining reservoirs, &c. In architecture it is technically divided into 5, 5½, 6, 6½, 7, 7½, 8, and 8½ lbs. cast lead, by which is understood that every *foot* superficial of such cast lead is to contain these several weights of metal in each respectively; so that an architect, when directing a plumber to cover or line a place with cast sheet-lead, tells the workman that "it is to be done with 6 or 7lb, lead;" meaning by it that he expects each foot superficial of the metal to be equal in weight to six, seven, or other number of pounds. The plumbers sometimes attempt deception in this arrangement, and particularly in work agreed for by contract, by putting down a lighter metal than the one they have engaged to do.

Every plumber who conducts business to any extent casts his sheet-lead at home; this he does from the pigs, or from old metal which he may have taken in exchange. The ready fusibility of lead enables the plumber at once to convert it into sheets. In order to this, he provides a metallick vessel, well fixed in masonry, and placed at one end of his casting-shop, and near to the mould or casting-table. The casting-table is, generally, in its form, a parallelogram, varying from six feet in width and from eighteen or more feet in length. It is raised from the ground as high as to be about six or seven inches below the top of the copper which contains the metal, and stands on strongly-framed legs, so as to be very steady and firm. The top of the table is lined with deal boarding laid very even and firm, and it has a rim projecting upwards four or five inches all round it. At the end of the table, nearest to the vessel in which is the heated lead, is adapted a box equal in length to the width of the table. At the bottom of this is made a long horizontal slit, from which the heated metal is to issue when it is to be cast into sheets. This box moves upon rollers along the edges of the projecting rim of the table, and is set in motion by ropes and pulleys fixed to beams over the table. As soon as the metal is found to be adequately heated, every thing is got ready to cast it on the table, the bottom of which is then covered with a stratum of dry and clean sand, and a rake is applied to smooth it regularly all over the surface. When this is done the box is brought close up to the copper. It must be observed that these boxes are so made as to contain as much of the melted lead as will cast the whole of the sheet at the same time, and the slit in the bottom is adjusted so as to let as much, and no more, out, during its progress along the table, as will be sufficient to cover it completely of the thickness and weight per foot required. When the box has dispersed its contents upon the table, it is suffered to cool and solidify, when it is rolled up and removed away and other sheets are made till all the melted metal in the copper is cast up, and it is emptied. The sheets so formed are rolled up and weighed, as it is by weight the publick are charged for sheet-lead.

The other kind of sheet-lead made use of by plumbers, called, in the trade, *milled lead*, is not manufactured at home. This they purchase of the lead merchant, as it is cast and prepared commonly at the ore and roasting furnaces. Such kind of lead is very *thin*, and commonly there is not more than four pounds of metal to the foot superficial. It is used by architects only for the covering of the hips and ridges of roofs of buildings. It is by no means adapted to gutters or terraces, or, in fact, to any part of a building much exposed either to great wear and tear or the effects of the sun, as it expands and cracks by the latter, and is soon worn away by the former exposure. It is laminated in sheets about the same size as has been described for cast sheet-lead; and, in the preparatory operations, a laminating-roller is used, or a flatting-mill, which reduces it to the state in which it is seen in commerce.

The greatest proportion of the leaden pipes used in water-works was formerly made of sheet-lead wrapped round an iron or wooden core, and the joint soldered up. The expense and trouble of this method was considerable, and the pipes thus made were extremely liable to burst at the joint, particularly if bent with a sudden angle. These defects suggested the idea of casting the lead in the form of pipes, by which means the trouble of previously casting and laminating the lead into sheets would be spared, and also the uncertainty of the soldered joints. Such pipes are cast in an iron mould, made in two halves, forming, when put together, a hollow cylinder, of the size of the intended pipe. A core, or iron rod, the size of the bore of the pipe, is adapted to this hollow mould, when the halves are put together, and secured by screws or wedges, so that it exactly occupies the centre of the hollow mould, leaving therefore an equal space all round between them. A spout, or entry, for the admission of the melted lead, is made by a corresponding notch cut in each half of the mould, and at another place is a similar vent for the escape of the air. This mould is fixed down upon a long bench; and a rack, moved by toothed wheels and pinions, is fitted up at one end of it, in a line with the centre of the mould, A hook at the end of the rack, being put into an eye at the end of the core of the mould, affords the means of drawing out the core, when the pipe is cast round it by pouring the melted lead into the mould, with the core in it, when the lead is cold, the core is drawn out very nearly to the end of the pipe, by the rack and wheel-work before mentioned. The halves of the moulds are then separated, and the pipe moved along in the mould, so that only an inch or two of its end remains in the mould, the halves of which are again fastened together, with the core between them, and its end entered an inch or two into the first piece of pipe. The mould is now filled with melted lead, the heat of which fuses and unites it with the end of the first piece, so as to double its length. The core is again drawn out a second time, and another length cast to the former. This method produces pipes of any length in one piece, but they are liable to have air-bubbles in them, which produce holes when the metal is thin, and the joining of the different lengths are not always perfectly sound.

The method which is now very generally adopted is to cast the lead in an iron mould, upon a cylindrical iron rod of the size for the bore of the intended pipe, the lead being three or four times the thickness of the intended pipe, and in short lengths which are then drawn through holes in pieces of steel, till the pipe is reduced to the intended thickness, and drawn out to the proper length. Another method is to reduce the pipe by repeatedly passing it through the two rollers of a flatting-mill, in each of which a number of semicircular notches are formed all round, so that the two rollers, when put together, have a number of circular cavities between them, which gradually diminish in diameter from one end of the rollers to the other. The pipe is first rolled between the largest of these cavities, then in a smaller, and so on to the last, which extends the pipe to its proper length, and diminishes its substance to the proper thickness, at the same time by condensing the metal hardens it, and makes a very strong tube with very little metal. Mr. John Wilkinson, of Brosely, England, the celebrated iron manufacturer, took out a patent in 1790 for the last-mentioned method, which he practised on a very extensive scale: he was not, however, the original inventor, the same thing having been proposed, in 1728, by M. Fayolle. Since the expiration of this patent many manufactories of this article have been established, some employing rollers, and others the draw-bench, for extending the pipes.

In 1804 Mr. Alderson took out a patent for lead pipes which were to be lined with tin, for the conveyance of beer, water, or other fluids which were in danger of receiving a taint from the corrosion of the lead. This he accomplished by casting a lead pipe in the manner above described, then withdrawing the core, and throwing into the pipe a small quantity of powdered resin. Another core smaller than the former was next inserted into the centre of the pipe, and melted tin poured in to fill up the space. The pipes were cast in a vertical position, and the resin melting by the heat, and floating upon the surface of the tin, acted as a flux to unite it with the lead. This pipe of lead, lined with tin, is to be drawn or rolled at length, as before mentioned. We are informed that Mr. Alderson purposed to employ rollers to extend them instead of the draw-bench.

Mr. Bramah's method of making lead pipes is very ingenious; it is performed by a process of pumping or forcing the metal in its fluid state through proper moulds. A boiler or kettle is fitted up over a fire-grate, with flues for the fusion of the metal; in the centre of this boiler a force-pump fixed up, its suction-valve drawing in the melt lead contained in the boiler: the forcing pipe of t pump proceeds through the side of the boiler a conducts the lead to the mould, which is fixed the end of the pipe outside the boiler: It consists a tube, bored perfectly smooth and cylindrical, interior diameter being equal to the outside of t pipe intended to be made; the end of the mo nearest the boiler expands into a conical mou larger than the mould itself, and across this wid part a cross bar is fixed, to support a core or ma drel, of a diameter equal to the bore of the intend pipe, and situated exactly in the centre of the mou leaving an equal space all round between them: t core is slightly conical, being rather less at its tremity, which terminates at the same length w the external mould. There must be sufficient op ings left at the sides of the cross bar supporting core to allow the lead to pass freely by, that it m unite again after passing the cross, and complet fill the mould. The mould passes through one the fire flues surrounding the boiler, that it may kept so hot as to procure the lead in its fluid sta till it arrives nearly at the point of the mould, whi is immersed in a cistern of hot water. The operati is simple; the pump, being worked, forces the le through the mould, the heat and length of whi are so regulated that the lead may chill a lit before it quits the extremity of the mould and iss forth in a solid state into the water cistern, formi a pipe of any length.

Solder is used by the plumber for the purpose securing the joints of leaden work in cases in whi a *lap or roll-joint* cannot be employed. It is general rule with respect to solder that it sho always be easier of fusion than the metal intend to be soldered by it. Next to this, care must taken that the solder be as far as it is possible of t same colour with the metal intended to be solder Technically, the soft *solder* is that which the plum makes use of, on account of its melting easily. T solder is composed of *tin and lead*, in equal pa fused together, after which it is run into moulds shape not unlike the common gridiron. In this st it is sold by the pound by the manufacturer. the operation of soldering, the surfaces of the me intended to be joined are scraped and rendered ve clean; they are then brought close up to each oth and, to secure them, they are held by one plum while another lays a little resin or borax about t joint. This is done to defend the metal, while s dering, from oxidation. The heated solder is th brought in a ladle and poured on the joint to soldered, and is smoothed and finished by rubbing about with a heated *grozing-iron*, and, when co plete, it is filed or scraped off, and made even w the joint and contiguous surface of the lead

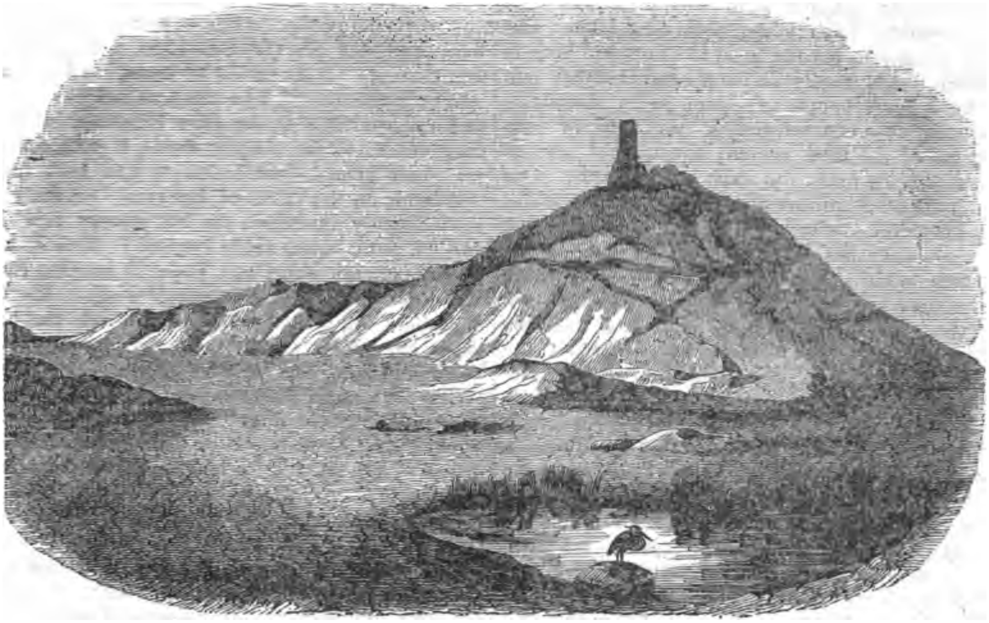
The method usually pursued for laying sheet-le consists, if it be for terraces or flat surfaces, of cov ing such places with a bottom as even as possib either by boarding or plastering; if by the form observing to have the boards thick enough to preve their warping and twisting upwards, as, when this not attended to, the lead work is soon cracked, a becomes very unsightly. The sheets of lead n being more than about six feet in width make necessary to have joints when a large surface is be covered; these joints the plumber manages in various ways to prevent them leaking. The best way is by forming what is called *rolls*. A roll consists of a piece of wood of about two inches square, planed rounding on its upper side; these are fastened under the joints of the lead between the edges of the two sheets which meet together, one of which is dressed up over the roll on the inside, and the other over both of them on the outside, by which means the water is prevented from percolating the flat. No other fastening is required than the adherence of the lead by being closely hammered together, and down upon the flat: indeed, all fastening to the sheet lead, exposed to heat and cold, ought to be avoided, as it expands and shrinks by such vicissitudes, and, if secured so as to prevent these from spontaneously effecting it, it will be cracked and dilapidated quickly. When rolls are not used, which is sometimes the case from their being found inconvenient by their projection, *seams*, as they are called are employed; these consist in simply bending the two edges of the lead which approach to each other up and again over one another, and then dressing them down close to the flat throughout their whole length. This plan is by no means equal to the one by the roll either for neatness or security. Soldering the joints is sometimes had recourse to for such kind of work; but it is a very bad way, and no good plumber would recommend it, as lead so fixed will be cracked and leak like a seive, after having been exposed to the heat of the sun. Leaden flats, as well as gutters, require to be laid with a current to keep them dry; this is effected by making them incline from back to front, or in the way in which it is determined that the sheets of lead are to be laid. A quarter of an inch to the foot is a sufficient fall for lead, that is, if the sheets be twenty feet long, they will require to be laid about five inches higher at one end than at the other. This inclination, or, as it is called, giving a *current*, is generally apportioned and determined on by the carpenter and plumber previously to the laying of the lead, while the former's part of the business is doing.

ARTS AND ARTISTS.

The cut below is from a celebrated painting by Andrea Sacchi.

Andrea Sacchi was a distinguished painter who was born at Rome, in 1594. He was a pupil of Francisco Albano whom he excelled in taste and correctness. He distinguished himself in a very eminent degree by his painting in fresco; and a strong emulation existing between him and Pietro de Cortona, they each arrived at a degree of perfection that neither of them might have known without such a competition. The pictures of Sacchi have such intrinsick merit and are finished with such uncommon care and skill that they will always receive the applause of the judicious and preserve their true value. He died in 1688.

[Adam discovering the dead body of Abel.]



[Tower of Babel.]

ILLUSTRATIONS OF SCRIPTURE.

In the eleventh chapter of Genesis we find the following passage:—

> "And the whole earth was of one language, and of one speech.
>
> And it came to pass, as they journeyed from the east, that they found a plain in the land of Shinar, and they dwelt there.
>
> And they said one to another, Go to, let us make brick, and burn them thoroughly. And they had brick for stone, and slime had they for mortar.
>
> And they said, Go to, let us build us a city, and a tower, whose top may reach unto heaven; and let us make us a name, lest we be scattered abroad upon the face of the whole earth.
>
> And the Lord came down to see the city and the tower, which the children of men builded.
>
> And the Lord said, Behold, the people is one, and they have all one language; and this they begin to do: and now nothing will be restrained from them, which they have imagined to do.
>
> Go to, let us go down, and there confound their language, that they may not understand one another's speech.
>
> So the Lord scattered them abroad from thence upon the face of all the earth: and they left off to build the city.
>
> Therefore is the name of it called Babel, because the Lord did there confound the language of all the earth: and from thence did the Lord scatter them abroad upon the face of all the earth."

The phrase in the fourth verse, "*A tower, whose top may reach unto heaven,*" is literally "and its top in the skies"—a metaphor common in all languages and nations for a very elevated and conspicuous summit; and which exonerates the builders from the imputed stupidity of attempting to scale the heavens. Whether there was any or what bad intention in this erection, has afforded much
discussion, into which we cannot enter.
able enough that some attempt to frustra
pointed dispersion of mankind was invol
undertaking; and it does not appear th
fusion of tongues was so much a pun
this attempt, as a proper and obvious
giving effect to the intended dispersion
bution of the human race. Leaving th
which we have only conjectures and d
pretations to guide us, let us inquire
of this famous tower in after-times,
any traces now remain of its existenc

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the tower also, was discontinued.
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Whatever additions he made t

to doubt that the original form was preserved; for not only would it have taken enormous labour and expense to alter it, but the form it afterward bore is that which would hardly, in such comparatively late times, have been thought of, being in its simplicity and proportions characteristick not only of very ancient but of the most ancient constructed masses which have been known to exist on the earth. Our earliest authentick information concerning this tower is from Herodotus, who however did not see it till thirty years after the Persian king Xerxes, in his indignation against the form of idolatry with which it had become associated, did as much damage to it as its solid mass enabled him, with any tolerable convenience, to effect. Herodotus describes the spot as a sacred inclosure dedicated to Jupiter Belus, consisting of a regular square of two stadia (one thousand feet) on each side, and adorned with gates of brass. In the midst of this area rose a massive tower, whose length and breadth was one stadium, (five hundred feet;) upon this tower arose another and another, till the whole had numbered eight. He does not say how high it was; but Strabo, who concurs with him in the dimensions of the basement-flat, adds, that the whole was a stadium in height. Taking these proportions of five hundred feet high, on a base of five-hundred feet on each side, we have a structure as high as the greatest of the Egyptian pyramids, but standing on a much narrower base; as the dimensions of the pyramid may (on an approximation from various statements) be reckoned at four hundred and eighty feet in height, on a base of seven hundred and fifty feet each way. Herodotus goes on to say, that, on the outside, steps were formed, winding up to each tower; and that in the middle of every flight a resting-place was provided, with seats. In the highest tower there was a magnificent chamber, expressly sacred to Belus, furnished with a splendid couch, near which was a table of gold. But there was no statue, the god being supposed to inhabit it at his will. About two centuries after the devastations committed by Xerxes, Alexander, among his mighty projects, conceived the idea of restoring this famous tower to its former condition; and, as a preparatory step, employed ten thousand men, for two months, in removing the rubbish which had fallen from the superstructure in consequence of the Persian king's dilapidations. This circumstance alone would induce us, at this distant time, in looking for the remains of this earliest great work of man, to be content with very faint traces of what we may suppose the original structure to have been. The distinction of being a remain of the Tower of Babel has been claimed for three different masses; namely, for *Nimrod's Tower*, at Akkerkoof; for the *Mujelibe*, about nine hundred and fifty yards east of the Euphrates, and five miles above the modern town of Hillah; and for the *Birs Nemroud*, to the *west* of that river, and about six miles to the south-west of Hillah. The Tel Nimrood, at Akkerkoof, has already been mentioned as denoting the site of Accad. Many travellers have believed it to be the Tower of Babel, having perhaps their imaginations excited by the name of Nimrod attached to it: but the people of the country certainly do not believe it to be the Tower of Babel, the site of which they always indicate by a reference to Hillah, on the Euphrates.

The Mujelibe was first described, in the conviction of its being the Tower of Babel, by Della Valle, who examined the ruins in 1616, and characterises this mass as "a mountain of ruins," and again, as a "huge mountain." The name means "overturned;" and as either this or the Birs Nemroud must afford the remains of the famous tower, if such still exist, we shall give a short description of both from the "Memoir on the ruins of Babylon," compared with the accounts furnished by Sir Robert Ker Porter and Sir John Macdonald (Kinnier.) The latter gentleman concurs with Della Valle, D'Anville, Rennell, and other high names, in considering it the Tower of Babel; but it is to be borne in mind, that none of them, except Macdonald, had any distinct information concerning the Birs Nemroud.

The Mujelibe is second only to the last named pile, in being one of the most enormous masses of brick-formed earth raised by the labour of man. Its shape is oblong, and its height, as well as the measurement of its sides, very irregular. Its sides face the four cardinal points; the measurement of that on the north being two hundred yards in length, the southern two hundred and nineteen, the eastern one hundred and eighty-two, and the western one hundred and thirty-six; while the elevation of the highest or south-east angle is one hundred and forty-one feet. The summit is a broad uneven flat. It ascends towards the south-eastern point, and forms an angular kind of peak, sloping gradually down in an opposite direction upon the bosom of the mound to a depth of about one hundred feet. The mass of the structure, as in that at Akkerkoof and the other Babylonish remains, is composed of bricks dried in the sun, and mixed with broken straw or reed in the preparation, cemented in some places with bitumen and regular layers of reeds, and in others with slime and reeds. In most Babylonish structures, several courses of brick intervene between the layers of reeds; but in this the reeds are interposed between every single course of bricks. The outer edges of the bricks having mouldered away, it is only on minute inspection that the nature of its materials can be ascertained. When viewed from a distance, the ruin has more the appearance of a small hill than a building; and the ascent is in most places so gentle, that a person may ride all over it. The bricks are larger and much inferiour to most others; nor indeed do any of those in the ruins near the Euphrates equal those in the ruins at Akkerkoof. Deep ravines have been sunk by the periodical rains in this stupendous mass, and there are numerous long narrow cavities, or passages, which are now the unmolested retreats of hyenas, jackals, and other noxious animals. Quantities of kiln-burnt bricks are scattered about at the base of the fabrick, and it is probable that this, as well as the other recesses which only now exhibit the inferiour material, were originally cased with the burnt bricks, but which, in the course of ages, have been taken away for the purposes of building —a practice which is known to have been in operation for more than two thousand years.

Every one who sees the Birs Nemroud feels at once, that of all the masses of ruin found in this region, there is not one which so nearly corresponds with his previous notions of the tower of Babel; and he will decide that it could be no other, if he is not discouraged by the apparent difficulty of reconciling the statements of the ancient writers concerning the temple of Belus, with the situation of this ruin on the western bank, and its distance from the river and the other ruins. That this difficulty is not insuperable has been shown by the writer of the article "Babylon," in the "Penny Cyclopedia;" and without giving any decided opinion, we cannot but subscribe to the view that the Birs Nemroud must probably be identified with the tower in question, if the latter is to be identified at all.

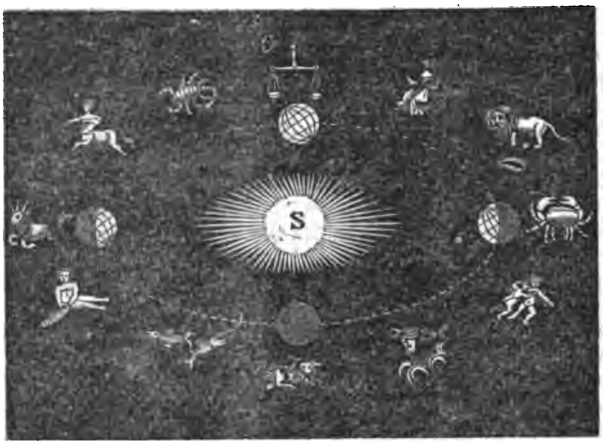
We give Mr. Rich's description, referring to Sir R. K. Porter for a more detailed account. "The Birs Nemroud is a mound of an oblong form, the total circumference of which is seven hundred and sixty-two yards. At the eastern side it is cloven by a deep furrow, and is not more than fifty or sixty feet high; but on the western side it rises in a conical figure to the elevation of one hundred and ninety-eight feet, and on its summit is a solid pile of brick, thirty-seven feet high by twenty-eight in breadth, diminishing in thickness to the top, which is broken and irregular, and rent by a large fissure extending through a third of its height. It is perforated by small square holes, disposed in rhomboids. The fire-burnt bricks of which it is built have inscriptions on them; and so excellent is the cement, which appears to be lime-mortar, that it is nearly impossible to extract one whole. The other parts of the summit of this hill are occupied by immense fragments of brick-work, of no determinate figure, tumbled together, and converted into solid vitrified masses, as if they had undergone the action of the fiercest fire, or had been blown up with gunpowder, the layers of brick being perfectly discernible." "These ruins," continues Mr. Rich, "stand on a prodigious mound, the whole of which is itself in ruins, channelled by the weather and strewed with fragments of black stone, sandstone, and marble. In the eastern part, layers of unburnt brick, but *no reeds*, were discernible in any part: possibly the absence of them here, when they are so generally seen under similar circumstances, may be an argument of the inferiour antiquity of the building. In the north side may be seen traces of building exactly similar to the brick pile. At the foot of the mound a step may be traced scarcely elevated above the plain, exceeding in extent by several feet each way the true or measured base; and there is a quadrangular inclosure around the whole, as at the Mujelibe, but much more distinct and of greater dimensions."

It may be observed that the grand dimensions of both the Birs and the Mujelibe correspond very well with that of the tower of Belus, the circumference of which, if we take the stadium at five hundred feet, was two thousand feet; that of the Birs is two thousand two hundred and eighty-six, and that of the Mujelibe two thousand one hundred and eleven, which in both instances is a remarkable approximation, affording no greater difference than is easily accounted for by our ignorance of the exact proportion of the stadium and by the enlargement which the base must have undergone by the crumbling of the materials. Sir R. K. Porter seems to show that three, and part of the fourth, of the original eight stages of the tower may be traced in the existing ruin of Birs Nemroud; and, with regard to the intense vitrifying heat to which the summit has mos evidently been subjected, he has no doubt that th fire acted from above, and was probably lightnin The circumstance is certainly remarkable in connexion with the tradition that the original tower o Babel was rent and overthrown by fire from heaven Porter thinks that the works of the Babylonis kings concealed for awhile the marks of the origina devastation; and that now the destructions of tim and of man have reduced it to nearly the same condition in which it appeared after the Confusion. A any rate it cannot now be seen without recollectin the emphatick prophecy of Jeremiah (ch. li. 25: "I will stretch out mine hand upon thee, and ro thee down from the rocks, and will make thee *burnt mountain.*"

SUPPOSED ANCIENT STATE OF THE NORTH AMERICAN CONTINENT.

There was read, at a recent sitting of the Geological Society, a paper "On the supposed ancien state of the North American continent, especially o the extent of an inland sea by which a great portion of its surface is conjectured to have been covered, and on the evidence of progressive drainag of the waters," by Mr. Roy. The author of thi communication, having been employed in extensiv surveys, especially in the lake districts of Nort America, found, on drawing out sections for professional purposes, that the country every where exhibited successive ridges, which encircled the lakes and, upon comparing sections to the north of Lak Ontario with others to the south, that the ridges exactly corresponded in elevation. The highest o these ridges is two hundred and ninety-six fee above the level of the sea, or seven hundred an sixty-two feet above that of Lake Ontario; and connecting this elevation with the physical features o the great valleys of the Mississippi and Missouri Mr. Roy supposes that the whole of the are bounded on the west by the Rocky mountains from the table land of Mexico to the parallel of forty-seven degrees of latitude—on the north by th barrier separating the headwaters of the lakes fron those of the northern rivers, and extending to Cap Tourmanti, below Quebec—and on the east by hill stretching through the United States to the gulf o Mexico, forming one vast inland sea, occupyin nine hundred and sixty thousand square miles Having given the extreme height and supposed extent of the sea, the memoir proceeded to show b what progressive operations the author consider that the boundaries were broken through and th waters drained, till they were reduced to the detached basins forming the Canadian lakes. These details, however, cannot be understood without th aid of diagrams.

We never yet knew a man disposed to scorn th humble who was not himself a fair object of scorn t the humblest. A man of a liberal mind has a reverence for the little pride that seasons every condition and would deem it sacrilege to affront, or abate, th respect which is maintained with none of the adventitious aids, and solely by the observance of th honesties.



[Twelve Signs of the Zodiac.]

TWELVE SIGNS OF THE ZODIAC.

The zodiac is a space which extends about eight degrees, on each side of the ecliptick like a belt or girdle, within which all the motions of the planets, except the newly discovered ones, are performed. The ecliptick is situated in the midst of the zodiac, and is a great circle, in which the sun makes his *apparent* annual progress, or rather it is the real path of the earth round the sun, and cuts the equator or equinoctial in an angle of 23° 28′, the points of intersection (Aries and Libra) being called the equinoctial points. The equinoctial points, contrary to the order of the signs, which is from west to east, have a slow motion from east to west, which motion from the best observations, is about 50¼ seconds in a year, so that it would require 25,791 years for the equinoctial points to perform an entire revolution round the globe. In the time of Hipparchus and the oldest astronomers the equinoctial points were fixed in Aries and Libra; but these signs, which were then in conjunction with the sun, are now a whole sign, or thirty degrees eastward of it, so that Aries is now in Taurus, Taurus in Gemini, &c. This motion of the equinoctial points is called the precession (but more properly, recession) of the equinoxes. Every twenty-eight years the sun performs what is called a cycle, (a certain period, or series of numbers proceeding in order, from first to last then returning again to the first, and so circulating perpetually, which was adopted in chronology, for the purpose of swallowing up the fractions of time in the revolutions of the heavenly bodies,) in which time the days of the months return again to the same days of the week, the sun's place to the same signs and degrees of the ecliptic, in the same months and on the same days, so as not to differ one degree in one hundred years; and the leap years begin the same course over again, with respect to the days of the week, on which the days of the month fall. The cycle of the moon is a revolution of nineteen years, in which time the conjunctions, oppositions, and other aspects of the moon, are within an hour and a half of being the same as they were on the same days of the months nineteen years before. The former point Aries, is called the vernal equinox, and the latter, Libra, the autumnal equinox. When the sun is in either of these points, the days and nights on every part of the globe are equal to each other.

With respect to the zodiac it comprises twelve signs, viz., three spring, three summer, three autumnal, and three winter signs, the six former of which are called northern, and the six latter southern, each sign being divided into thirty degrees, and the distance of the point in the ecliptick, at which the sun is found at any time from the equator, being called the declination. These signs are Aries, the ram (composed of 66 stars); Taurus, the bull (of 141, including the Pleiades); Gemini, the twins (of 85), Cancer, the crab (of 83); Leo, the lion (of 95); Virgo, the virgin (of 110); Libra, the balance (of 51); Scorpio, the scorpion (of 44); Sagittarius, the archer (of 69); Capricornus, the goat (of 51); Aquarius, the water-bearer (of 108); and Pisces, the fishes (of 113). The northern constellations are in number thirty-four, the southern forty-seven, forming altogether, with the zodiacal ones, ninety-three.

It is conjectured that the figures in the signs of the zodiac (a Greek word signifying living creatures) are descriptive of the seasons of the year, and that they are Chaldean or Egyptian hieroglyphicks, intended to represent some remarkable occurrence in each month. Thus the spring signs were distinguished for the production of those animals which were held in the greatest esteem, viz., the sheep, the black cattle, and the goats, the latter being the most prolifick were represented by the figure of Gemini. When the sun enters Cancer, he discontinues his progress toward the north pole, and begins to turn back toward the south pole. This retrograde motion was represented by a *Crab*, which is said to go backward. The heat that usually follows in the next month was represented by the *Lion*, an animal remarkable for its fierceness, and which, at this season, was frequently impelled through thirst to leave the sandy desert, and make his appearance on the banks of the Nile. The sun entered the sixth sign about the time of harvest, which season was, therefore, represented by a *Virgin*, or a female reaper, with an ear of corn in her hand. When the sun enters *Libra*, the days and nights are equal all over the world, and seem to observe an equilibrium like a balance. Autumn, which produces fruits in great abundance, brings with it a variety of diseases: this season was represented by that venomous animal the *Scorpion* who wounds with the sting in his tail as he recedes. The fall of the leaf was the season for hunting, and the stars which marked the sun's path at this time were represented by a huntsman or *Archer*, with his arrows and weapons of destruction.

The *Goat*, which delights in climbing and ascending some mountain or precipice, is the emblem of the winter solstice, when the sun begins to ascend from the southern tropick, and gradually to increase in height for the ensuing half year.

Aquarius, or the water-bearer, is represented by the figure of a man pouring out water from an urn, an emblem of the dreary and uncomfortable season of winter. The last of the zodiacal constellations was *Pisces*, or a couple of fishes tied back to back, representing the fishing season. When the severity of the winter is over, the fields do not afford sustenance, but the seas and rivers are open and abound with fish.

The Chaldeans and Egyptians were the original inventors of astronomy, and they registered the events in their history, and the mysteries of their religion among the stars by emblematical figures. The Greeks displaced many of the Chaldean constellations, and placed such images as had reference to their own history in their room. The same method was followed by the Romans: hence the accounts given of the signs of the zodiac and of the constellations are contradictory and involved in fable.

AMERICAN ANTIQUITIES.

Near the cove at the mouth of West river, in Vt. are what are termed the "Marked Rocks." They are so called from being covered with curious and antique hieroglyphicks. In this vicinity, two human skeletons were lately found by Mr. Hollan Pettes, while he was ploughing. One was considerably decayed, and the other in a remarkable state of preservation.—The latter is now in the possession of Dr. Gilbert, of Brattleboro'. The beautiful valley of Connecticut was a favourite haunt of the Indians—the rich meadows yielding a crop of corn with little labour, and the river and its tributaries, and the woods which skirted them, furnishing him with plenty of fish and game, and many Indian implements have been found in that neighborhood, particularly upon what is called the "Dummer farm." It was there that the first settlement was made in Vermont, and near there still stands Fort Dummer, one of the most interesting relicks of Indian days, now extant in that region. From this fort Mrs. How was carried captive by the savages, to Canada. The story is familiar to most readers, and especially to all those who received the rudiments of their education while the old "American Preceptor" was the principal reading book in the New England schools, in which the account is given at length. A worthy descendant and namesake of the heroine of the story occupies the fort as a dwelling. The fort is fast decaying, and all the interesting and venerable relicks of days of yore will soon fall away and the only memento of the hardships and sufferings which our forefathers endured will be the page of history. But this can never so vividly realize to our minds the thrilling scenes of Indian days through which they passed, as to look on the very buildings in which they defended themselves from the attacks, and to see the very prints of the tomahawks of the savage foe. We therefore hope that measures may be taken to preserve this old fort from ruin, that we may still point to it as a relick of the first settlement.

All that relates to the first settlement of the country is interesting, and still more so the facts connected with the history of the aborigines before the discovery, a race that inhabited this land, hundreds and thousands of years ago. It is stated that an old burying ground has been found in White county Tennessee, near the town of Sparta, in which numerous skeletons are found from seven to nine feet long, deposited in coffins of stone. These coffins too, are covered with various hieroglyphicks and inscriptions, which the learned have not yet been able to translate. They are generally very imperfect, and the lines can scarcely be decyphered. In the same neighbourhood are said to be found also three burying grounds, containing skeletons buried in the same manner, only nineteen inches long. One of them had ninety-four pearl beads around the neck. The graves are about two feet deep. Of these last, Jefferson speaks, in his "Notes on Virginia," which state, at the time he wrote, enclosed in its boundaries all the territory of what is now Tennessee. Mr. Jefferson does not however, say "stone coffins," but that the graves themselves were enclosed with slabs of stone, two at the sides, about twenty-four inches in length; two at each end about one foot long, and one at the bottom and top. The skeletons are found about two feet below the surface of the ground and their remarkable preservation is attributed to the saline qualities of the earth in which they are deposited, being near the salt works of that state.

THE NOBLE SAILOR.—Mrs. Sigourney.

[The occurrence here related took place during the great conflagration in New York, December, 16th 1835.]

It was a fearful night,
  The strong flame fiercely sped,
From street to street, from spire to spire,
  And on their treasures fed;
Hark! 'tis a mother's cry,
  High o'er the tumult wild,
As rushing toward her flame-wrapt home,
  She shriek'd—"My child! my child!"

A wanderer from the sea,
  A stranger mark'd her wo,
And in his generous bosom woke
  The sympathetick glow.
Swift up the burning stairs
  With darting feet he flew,
While sable clouds of stifling smoke
  Concealed him from the view.

Fast fell the blazing beams
  Across his dangerous road,
Till the far chamber where he grop'd
  Like fiery oven glow'd.
But what a pealing shout!
  When from the wreck he came
And in his arms a smiling babe,
  Still toying with the flame.

The mother's raptur'd tears
  Forth like a torrent sped,
Yet ere the throng could learn his name,
  That noble tar had fled.
Not for the praise of man
  Did he this deed of love,
But on a bright, unfading page,
  'Tis register'd above.

METEOROLOGICAL SKETCHES:

BY AN OBSERVER.

(Concluded from page 74.)

WATER-SPOUTS AND WHIRLWINDS.

The character of these meteors has already been described in a measure, in our account of hail and thunder-storms. The identity of whirlwinds and water-spouts, was maintained by Franklin, and although at a later period this has been called in question, it appears to have been done without sufficient reason.

From the equal distribution of the atmosphere as the oceanic envelope of our earth, it results that no movement of great violence can take place in any of its parts, except by means of a direct circuit of rotation in the form of a vortex or active whirlwind.

A vortex will not be regularly formed, nor continue itself in action, without the aid of an external propelling force and a constant spiral discharge from that extremity of its axis towards which is the tendency of motion. Both these conditions, it is believed, are fulfilled to the letter in the case of a common whirlwind or water-spout. The air at the upper extremity of the whirling column, owing to its elevation, is rarer than at the base, and the column itself, particularly in its central portions, is mechanically rarefied by the centrifugal effect of its own whirling motion. We have thus a sort of rarefied chimney into which the denser air at the base of the column is continually forced, by the pressure of the surrounding atmosphere; not to ascend in a separate current as in the common chimney, but entering into the organization of the whirling vortex, to supply the place of the preceding portions of air which are winding inwards and upwards to be again discharged at the upper extremity. The condition of force by which the propulsion is maintained, is found in the pressure of the surrounding atmosphere upon all sides of the mechanically rarefied column, and if the expansive whirling motion be sufficiently active to produce nearly a vacuum at the centre, the external propelling force will be nearly fifteen pounds to the square inch; and as the whirling column turns within its own compass like a top or any other rotative body, this force is quite sufficient to account for all the violence that is ever produced.

Were there no vorticular or whirling action already excited, and no discharge from the upper extremity of the vortex, the external pressure could not produce continued rotation; but this movement and upward discharge having once commenced, from any cause, the particles near the exterior of the column, like those of water in a funnel, yield at a little more than a right angle, to the external pressure, in their spirally approximating course towards the rarefied centre. By the slowness of this central approximation as compared with the whirling action, the intensity or magnitude of the external pressure becomes gradually merged in the velocity of the rotative action. As the area of the spiral circuit decreases rapidly as we approach the centre, it follows that the velocity of the whirling movement must be proportionably increased, as we perceive it to be in the funnel and in all regular formed vortices. Thus, if the rotative velocity near the exterior of a whirling column be at the rate of but ten miles an hour, at one third nearer the centre the velocity must be more than doubled, and at two thirds of the distance from the first named point to the centre, the absolute whirling velocity must be increased nine fold, which in this case is equal to ninety miles an hour; and in consequence of the reduced diameter of the circuit of gyration at the last point, the number of revolutions must here be as four hundred, to one at the point first mentioned. The increased ascending velocity, however, is not here taken into account, which may perhaps reduce the number of comparative revolutions in the central portions of the column. The extraordinary condensing and electric effects which often attend or follow these active whirlwinds, have been cursorily noticed under the head of thunder-storms.

It is not intended to dwell here upon the causes by which whirlwinds and spouts are excited or first set in motion, but local disturbances in a heated stratum, at the points where the same is beginning to be penetrated by the colder air of a higher stratum, are probably the chief exciting causes, as in thunder-storms. The agency of heat may also be effective in continuing the upward discharge and vorticular organization, in cases where there is great disparity in the temperatures of the air at the upper and lower extremities of the whirling mass or column, but it is to the mechanical expansion caused by the centrifugal action and the powerful impulse of the external atmospheric pressure, that the increased and powerful activity of the whirlwind is chiefly to be referred.

The term *water-spout* is undoubtedly a misnomer, as there is no effect produced of which this term is properly descriptive, although the term air-spout would not be greatly inappropriate. The visible column of condensed vapour which often appears in the rarefied centre of the vortex when the latter is not enveloped in cloud, has probably given name to this meteor. But the water of the sea is not taken up by the spout or whirlwind, except in a slight degree and in the form of fine spray, like other light matter which is swept from the surface. This cloudy stem or column frequently appears and disappears, while the action of the whirlwind continues without any important change. Owing to this fact, observers sometimes believe that they witness the commencement of a water-spout, or tornado, when the same has previously been in action for one or more hours, and when the cloudy pipe or pillar happens to disappear, the spout is supposed to have 'burst,' while, often, it has undergone no important change, except, perhaps, a slight decrease in its activity. The active and violent portion of the whirlwind surrounds the spout invisibly, and is probably of much greater diameter at a distance from the surface of the earth than at the base of the spout. Thus, when a spout or whirlwind has passed near a ship, the upper spars have been converted into wreck while no violence of wind was felt on the deck.

Water-spouts follow the course either of the surface wind or of the higher current with which they may communicate, or their course may be modified by both these influences without being absolutely determined by either. They abound most, however, in those calm regions which are found at the external limits of the trade winds, and in the regions near the equator.

It has been common to ascribe whirlwinds and water-spouts, as well as larger whirlwind storms, to an impulse produced by the meeting of contrary currents, but the laws of distribution and of motion in an oceanic body, are such as do not permit the movements of its different currents and gyrations to meet in conflict with each other; besides, any conflicting movement in the air would necessarily produce a rise in the barometer, whereas it is generally known to fall at the commencement of a storm or whirlwind, either of large or small extent. We may observe, also, that whirlwinds and spouts appear to commence gradually, and to acquire their full activity without the aid of foreign causes; besides, it is well known that they are most frequent in those calm regions where, apparently, there are no active currents to meet each other, and they are least frequent where currents are in full activity.

OF TRADE WINDS AND THE CIRCUITOUS CHARACTER OF THE ATMOSPHERIC CURRENTS.

It is found that in almost every country, and in every sea, the wind is more or less predominant in a particular direction. In open sea, between the equator and the 30th parallel of north and south latitudes, the wind, for the most part, blows from the eastward; but near the eastern borders of any ocean, below these latitudes, the wind blows in a direction more towards the equator than in its central or western portions.

In the higher latitudes north of 30°, the westerly winds are found greatly to predominate, although the eddying or rotative action which is acquired by large portions of the lower stratum of air in these latitudes, causes much diversity and frequent changes in the local direction of the wind. But in the common region of clouds where this eddying movement is less frequent, the main atmospheric current, at least in the United States, is fully as constant from the westward as is the trade wind from the eastward in any tropical region.

At New York, in four successive years, the westerly winds at the surface have been found to be to the easterly, as nearly two to one. Observations on the courses of the clouds for the same period, show the prevalence of an atmospheric current from the westward at that elevation to be, as compared with those from the eastward, nearly as fourteen to one; the prevailing wind being south-westerly. At Montreal, in Lower Canada, as appears by the observations of J. M'Cord, Esq., the westerly surface winds also appear to exceed the easterly, in the proportion of more than four to one. In consequence of the general prevalence of westerly winds and currents in these latitudes, the passages of the fastest ships, from Europe to America, are found to occupy a much longer period than from America to Europe.

The first movement of the trade winds towards the equator and westward, necessarily occasions an equal movement from the higher latitudes to supply their place; and as the trade winds in their progress westward are opposed by the American and Asiatic continents, across which these winds do not pass, it follows that these winds become deflected or thrown off towards the poles in order to support an equal distribution of the atmosphere in the higher latitudes; but the air thus transferred to these latitudes carries with it the rotative impulse which it acquired in the tropical latitudes, and by reason of the slower rotative motion which here prevails, is thrown to the eastward in the form of westerly winds.

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position of these currents is found in the retardation to which the lowest portions of the air are subject, owing to the resistance of the earth's surface.*

The rotative motion of the atmosphere and the earth's surface in the latitudes which form the boundary between the trade winds and the returning westerly winds being nearly equal, this region is necessarily subject to calms, and to those sudden gusts and squalls which are usually excited in warm regions in the absence of a prevailing wind. This region, in the North Atlantic, is known to navigators as the *horse latitudes*, because the traders between New England and the West Indies, in consequence of the lack of sustenance occasioned by these calms, were sometimes under the necessity of throwing overboard the whole or a part of their deck loads of horses. The great circuits of winds intersect and cross these latitudes in both directions on almost every meridian, but with little sensible effect at the surface, except towards the eastern margin of the Atlantic, where the northerly winds decidedly prevail; and towards the western margin of the Atlantic and in the Gulf of Mexico, where the southerly winds are usually prevalent.

Similar results are found in nearly all the regions which separate the great natural circuits of winds from each other, and these tracts of ocean are known by the designation of *the calms*, and sometimes are called the *rains* or the *variables*. Such is the region about the equator, which separates the northern from the southern trade winds, and the easterly from the westerly monsoons. The easterly monsoons, in approaching the equator, where they run into the westerly monsoons, necessarily acquire the same velocity of rotation as the earth's crust, which of course produces calms; the northerly or southerly tendency of the monsoons being here too small to produce a leading breeze at the surface.

LAND AND SEA BREEZES.

Near the shores of an island or country it is often found that the wind, during different hours of the day and night, blows alternately to and from the land. Or in the case of a general or trade wind which is parallel to the coast, its course becomes alternately modified by an approximation to the above result. This effect has been justly ascribed to the influence of diurnal heat and cold. Not that any vacuum is created by the heat into which the surrounding air rushes, as has sometimes been supposed; nor that a warmed stratum of air necessarily rises from the surface and ascends to the higher regions; for, aside from the general error of these notions, a flat, low, and strongly heated island or coast, is found to have less effect in producing these breezes than a high and sloping country of more even temperature.

The truth appears to be, that when the stratum which lies upon the inclined surface of a coast becomes warmed and rarefied by the daily heat, it is forced by the increment of pressure at its lowest margin to move along the inclined surface of the country in the direction of greatest elevation, or as near that direction as the prevailing tendency of the lower current will allow. Owing to the cooling process which goes on during the night, the specific gravity of this inclined stratum becomes predominant, and the reverse movement then commences and continues into the following morning. We find, too, that on the slopes of certain coasts and islands where there is sufficient elevation, the higher margin of this stratum, at certain seasons, will daily reach an altitude at which it is brought in contact with a higher stratum sufficiently cold to set in operation a squall or thunder storm, at a certain hour; after which the equilibrium is restored and the usual counter movement again follows in its turn.

Some diurnal effect of this kind upon the wind may be observed at times in almost every region; and, taken altogether, it is probably the most extensive agency which is exercised by heat in the production of winds.

R.

CHINESE DINNERS.

The cut (p. 109) represents a Chinese rice bowl and chop sticks, articles which are used very skilfully by the natives, but which occasions much embarrassment to the foreigners who visit that interesting country. The following description of a Chinese dinner is from the pen of the French traveller La Place—He says, "The first course was laid out in a great number of saucers of painted porcelain, and consisted of various relishes in a cold state, as salted earth-worms, prepared and dried, but so cut up that I fortunately did not know what they were until I had swallowed them; salted or smoked fish, and ham, both of them cut into extremely small slices; besides which there was what they call Japan leather, a sort of darkish skin, hard and tough, with a strong and far from agreeable taste, which seemed to have been macerated for some time in water. All these etcæteras, including among the number a liquor which I recognised to be soy, made from a Japan bean, and long since adopted by the wine drinkers Europe to revive their faded appetites or tastes, were used as seasoning to a great number of stews which were contained in bowls, and succeeded each other uninterruptedly. All the dishes without exception swam in soup. On one side figured pigeons'-eggs, cooked in gravy, together with ducks and fowls cut very small, and immersed in dark-coloured sauce; on the other, little balls made of sharks'-fins, eggs prepared by heat, of which both the smell and taste seemed to us equally repulsive, immense grubs, a peculiar kind of sea-fish, crabs and pounded shrimps.

"Seated at the right of our excellent Amphitryon, I was the object of his whole attention, but nevertheless found myself considerably at a loss how to use the two little ivory sticks, tipped with silver, which, together with a knife that had a long, narrow, and thin blade, formed the whole of my eating apparatus. I had great difficulty in seizing my prey in the midst of those several bowls filled with gravy: in vain I tried to hold, in imitation of my host, this substitute for a fork between the thumb and the two first fingers of the right hand; for the cursed chop-sticks slipped aside every moment, leaving behind them the unhappy little morsel, which I coveted. It is true that the master of the house came to the relief of my inexperience (by which he was much entertained) with his two instruments, the extremities of which, a few moments before, had touched a mouth, whence

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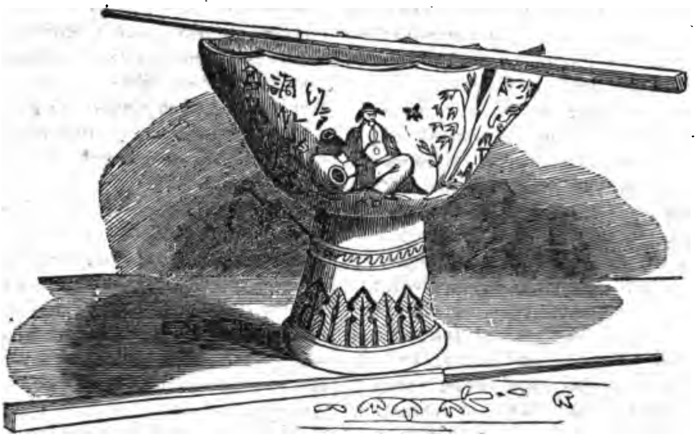
* There is a point of some interest which it has not been found convenient to introduce in these sketches;—viz:—an explanation of the causes which tend to produce extensive and successive gyrations in the lower strata or currents of air which pass from the tropical to the higher latitudes; and which tend also to obliterate these gyrations in the strata which are leaving the higher latitudes and approaching the tropical regions.



[Chinese Bowl and Chop-Sticks.]

age, and the use of snuff and tobacco, had cruelly chased its good looks. I could very well have dispensed with such an auxiliary, for my stomach had already much ado to support the various ragouts, each one more surprising than another, which I had been obliged, *nolens volens*, to taste of. However, I contrived to eat with tolerable propriety a soup prepared with the famous birds'-nests, in which the Chinese are such epicures. The substance thus served up is reduced into very thin filaments, transparent as ising-glass, and resembling vermicelli, with little or no taste. At first I was much puzzled to find out how, with our chop-sticks, we should be able to taste of the various soups which composed the greater part of the dinner, and had already called to mind the fable of the fox and the stork, when our two Chinese entertainers, dipping at once into the bowls with the little saucer placed at the side of each guest, showed us how to get rid of the difficulty."

"To the younger guests, naturally lively, such a crowd of novelties presented an inexhaustible fund of pleasantry, and, though unintelligible to the worthy Hong merchant and his brother, the jokes seemed to delight them not a bit the less. The wine in the meanwhile circulated freely, and the toasts followed each other in rapid succession. This liquor which to my taste was by no means agreeable, is always taken hot; and in this state it approaches pretty nearly to Madeira in colour, as well as a little in taste; but it is not easy to get tipsy with it, for, in spite of the necessity of frequently attending to the invitations of my host, this wine did not in the least affect my head. We drank it in little gilt cups, having the shape of an antique vase, with two handles of perfect workmanship, and kept constantly filled by attendants holding large silver vessels like coffee-pots. The Chinese mode of pledging is singular enough, but has at the same time some little resemblance to the English. The person who wishes to do this courtesy to one or more guests gives them notice by an attendant; then, taking the full cup with both hands, he lifts it to the level of his mouth, and, after making a comical sign with his head, he drinks off the contents; he waits until the other party has done the same, and finally repeats the first nod of the head, holding the cup downward before him, to show it is quite empty.

"After all these good things, served one upon the other of which it gave me pleasure to see the last, succeeded the second course, which was pre ceded by a little ceremony, of which the objec seemed to me to be a trial of the guests' appetites Upon the edges of four bowls, arranged in a square three others were placed filled with stews, and sur mounted by an eighth, which thus formed the summi of a pyramid; and the custom is to touch none of these, although invited by the host. On the refusa of the party, the whole disappeared, and the table was covered with articles in pastry and sugar, in the midst of which was a salad composed of the tender shoots of the bamboo, and some watery preparations that exhaled a most disagreeable odour.

"Up to this point, the relishes, of which I first spoke, had been the sole accompaniments of all the successive ragouts; they still served to season the bowls of plain rice, which the attendants now for the first time placed before each of the guests. I regarded with an air of considerable embarrassment the two little sticks, with which notwithstanding the experience acquired since the commencement of the repast, it seemed very doubtful whether I should be able to eat my rice grain by grain, according to the belief of Europeans regarding the Chinese custom. I therefore waited until my host should begin, to follow his example, foreseeing that, on this new occasion, some fresh discovery would serve to relieve us from the truly ludicrous embarrassment which we all displayed: in a word, our two Chinese, cleverly joining the ends of their chop-sticks, plunged them into the bowls of rice, held up to the mouth, which was opened to its full extent, and thus easily shovelled in the rice, not by grains, but by handfuls. Thus instructed, I might have followed their example; but I preferred making up with the other delicacies for the few attractions which, to my taste, had been displayed by the first course. The second lasted a much shorter time: the attendants cleared away every thing. Presently the table was strewed with flowers, which vied with each other in brilliancy; pretty baskets, filled with the same, were mixed with plates which contained a vast variety of delicious sweetmeats as well as cakes, of which the forms were as ingenious as they were varied. This display of the productions of nature and of art was equally agreeable to the eyes and the tastes of the guests: by the side of the yellow plantain was seen the *litchi*, of which the strong, rough, and bright crimson skin defends a stone enveloped in a whitish pulp, which for its fine aromatic taste is superior to most of the tropical fruits. Indigenous to the provinces which border on the Chinese Sea, the newly-gathered litchi presents to the inhabitants a wholesome and delicious food during the summer, and forms, when dried, an excellent provision for the winter. With these fruits of the warm climates were mingled those of the temperate zone, brought at some expense from the northern provinces; as walnuts, chestnuts (small, and inferiour to those of France), apples, grapes, and Peking pears, which last, though their lively colour and pleasant smell attracted the attention, proved to be tasteless, and even retained all the harshness of wild fruits. The conversation, frequently interrupted during the commencement of the repast, in order to do honour to the numerous pledges of our host, and to all the wonders of the Chinese kitchen assembled before us, became now general and sufficiently noisy. My neighbour especially little accustomed to such lively mirth, was quite enchanted, and displayed his satisfaction by loud laughs, to which was perpetually joined the sonorous accompaniment of his somewhat overloaded stomach. According to the received usages of Chinese fashion, I ought to have followed this example, in testimony of a more than satisfied appetite, but my wish to gratify our excellent Amphitryon would not carry me quite so far. This custom, which in France would seem more than extraordinary, was however nothing new to myself, for I had already remarked it in the best societies at Manilla. Need I then to be surprised on finding the Chinese so little nice in their convivial habits, when our near neighbours the Spaniards have not yet cast off this remnant of the grossness of the olden time?'

THE HUMAN BODY—No. II.

Anatomists and physiologists have been at great pains to discriminate and classify the primary tissues; for it is found that when employed in the composition of the body, each preserves its peculiar structure and properties wherever placed, however combined, and to whatever purpose applied, undergoing only such modification as its local connexions and specific uses render indispensable. Considering every substance employed in the construction of the body, not very obviously alike, as a distinct form of organized matter, these primary tissues may be said to consist of five, namely, the membranous, the cartilaginous, the osseous, the muscular, and the nervous.

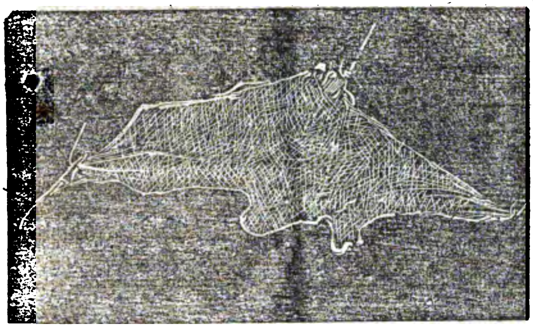
The first primary tissue is the peculiar substance termed MEMBRANE. It has been already stated that one of the ultimate forms of animal matter is a coagulable substance, becoming concrete or solid under the process of coagulation. The commencement of organization seems to be the arrangement of this concrete matter into straight thready lines, at first so small as to be imperceptible to the naked eye. Vast numbers of these threads successively uniting, at length form a single thread of sufficient magnitude to be visible, but still smaller than the finest thread of the silkworm. If the length of these threads be greater than their breadth, they are called fibres; if, on the contrary, their breadth exceed their length, they are termed plates or laminæ. By the approximation of these fibres or plates in every possible direction, and by their accumulation, combination, and condensation, is constituted the simplest form of organized substance, the primary tissue called membrane.

Membrane once formed is extensively employed in the composition of the body; it is indeed the material principally used in producing, covering, containing, protecting, and fixing every other component part of it. It forms the main bulk of the cartilaginous tissue; it receives into its cells the earthy matter on which depend the strength and hardness of the osseous tissue; it composes the canals or sheaths in which are deposited the delicate substance of the muscular, and the still more tender pulp of the nervous tissue; it gives an external covering to the entire body; it lines all its internal surfaces; it envelopes all internal organs; it enters largely as a component element into the substance of every organ of every kind; it almost wholly constitutes all the internal pouches and sacs, such as the stomach, the intestines, the bladder; and all tubes and vessels, such as arteries, veins, and lymphatics; it furnishes the common substance in which all the parts of the body are, as it were, packed; it fills up the interstices between them; it fixes them in their several situations; it connects them all together; in a word, it forms the basis upon which the other parts are superinduced; or rather the mould into which their particles are deposited; so that were it possible to remove every other kind of matter, and to leave this primary tissue unaltered in figure and undiminished in bulk, the general form and outline of the body, as well as the form and outline of all its individual parts, would remain unchanged.

The properties which belong to membrane are cohesion, flexibility, extensibility, and elasticity. By its property of cohesion, the several parts of the body are held together; by its combined properties of cohesion, flexibility, and extensibility, the body in general is rendered strong, light, and yielding, while particular parts of it are made capable of free motion. But elasticity, that property by which parts removed from their situation in the necessary actions of life are restored to their natural position, may be regarded as its specific property. The varied purposes accomplished in the economy by the property of elasticity will be apparent as we advance in our subject. Meantime, it will suffice to observe that it is indispensable to the action of the artery in the function of the circulation; to the action of the thorax in the function of respiration; to the action of the joints in the function of locomotion: in a word, to the working of the entire mechanism by which motion of every kind and degree is effected. All these properties are physical, not vital; vital properties do belong even to this primary form of animal matter; but they are comparatively obscure. In the tissue with which organization commences, and which is the least removed from an inorganic substance, the properties that are prominent and essential are merely physical.

By chymical analysis, membrane is found to contain but a small proportion of azote, the peculiar element of animal matter. Its proximate principles are gelatin, albumen, and mucus. In infancy and youth, gelatin is the most abundant ingredient; at a more advanced period, albumen predominates*. Gelatin differs from albumen in containing a less proportion of azote and a greater proportion of oxygen; on both accounts it must be regarded as less animalized. Thus animalization bears a certain relation to organization. The simplest animal tissue is the least animalized, and the least of all at the earliest period of life. Not only are the physical and mental powers less developed in the young than in the adult, but the very chymical composition of the primary tissue of which the body is constructed is less characteristic of the perfect animal.

Membrane exists under several distinct forms; a knowledge of the peculiarities of which will materially assist us in understanding the composition of the body. The simplest form of membrane, and that which is conceived to constitute the original structure from which all the others are produced, is termed the *cellular*. When in thin slices, *cellular membrane* appears as a semi-transparent and colourless substance; when examined in thicker masses, it is of a whitish or grayish colour. It consists of minute threads, which cross each other in every possible direction, leaving spaces between them, and thus forming a mesh or net-work (see cut), not unlike the spider's web. The term cells, given to these interspaces, is employed rather in a figurative sense than as the expression of the fact; for there are no such distinct partition as the term cell implies. The best conception that can be formed of the arrangement of the component parts of this structure is, to suppose a substance consisting of an infinite number of slender thready lines crossing each other in every possible direction. The interspaces between these lines during life, and in the state of health, are filled with a thin exhalation of an aqueous nature, a vapour rather than a fluid, rendering and keeping the tissue always moist. This vapour consists of the thinner part of the blood, poured into these interstitial spaces by a process hereafter to be described, termed secretion. When occupying those spaces, it makes no long abode within them, but is speedily removed by the process of absorption. In health, these two operations exactly equal each other; but if any cause arise to disturb the equilibrium, the vapour accumulates, condenses and forms an aqueous fluid, which distends the cells and gravitates to the most depending parts. Slightly organized as this tissue is, an indistinct as its vital functions may be, it is obviou that it must be the seat of at least two vital function secretion and absorption.

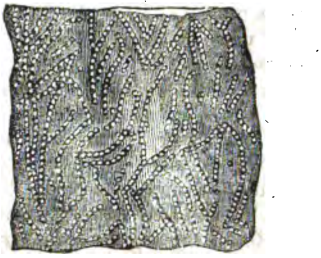


[A single film of the cellular tissue lifted up and slightly distended.]

It is certain that the interspaces or cells of thi membrane have no determinate form or size, that the communicate freely with each other, and that thi communication extends over the whole body; for a limb which has been infiltrated be frozen, a tho sand small icicles will be formed, assuming the sha of the containing cells, some of which are found to circular and others cylindrical, and so on. If air water escape into any particular part of the body is often effused over the whole extent of it, a butchers are observed to inflate animals by makin a puncture in some part where the cellular tissu loose, and from this one aperture the air is force the most distant parts of the body.

Cellular membrane, variously modified and dispo forms the main bulk of all the other solid parts of body, constituting their common envelope and of union, and filling up all their interstices. dense or loose, coarse or fine, according to its s tion and office. Wherever it is subject to pres it is dense and firm, as in the palm of the hand the sole of the foot; around the internal organs more loose and delicate, and it becomes finer finer as it divides and subdivides, in order to env the soft and tender structures of the body.

According to some who have carefully exa with the microscope its component threads, the sist of minute particles of a globular figure: microscopical observers regard the cellular



[A portion of cellular tisue, very highly magnified, sh strings of globules of which its ultimate fibres are supposed to consist.]

as coagulated or condensed animal substar fectly amorphous (without form).

Every part of this tissue is penetrated by veins, absorbents, and nerves, endowing it perties truly vital, though in a less degree of the other primary tissues; and varied and as the uses are which it serves in the eco most manifest, though certainly not the are those which depend upon its physical of cohesion, flexibility, extensibility, and

The tissue which contains the fat, *adipose*, is the second form of membr obviously a modification of the cellular, f it differs both in the magnitude of its fibres constitutes a tougher and coarser web, a arrangement; for it is so disposed as to f bags in which the fat is contained. Adi consists of rounded packets, separated other by furrows; each packet is c small spheriodal particles (2, 2); each particle is again divisible into still smaller grains, which, on minute inspection, present the appearance of vesicles filled with the adipose matter (3).

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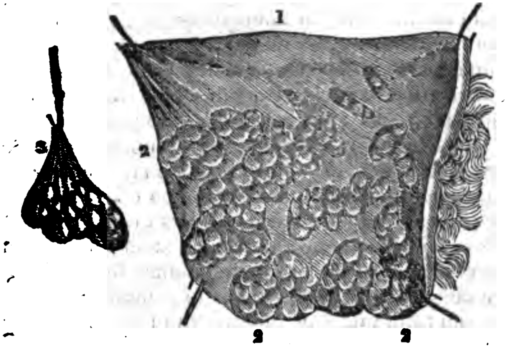
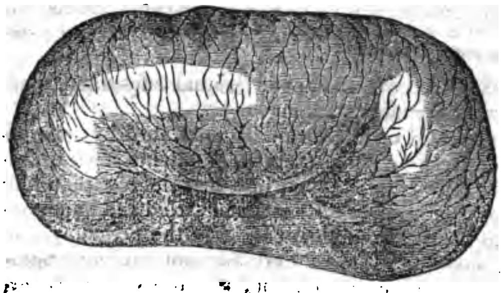
* Hence in the preparation of jelly as an article of diet, the parts of young animals, as the feet of the calf, are principally employed; whereas soups made from beef contain a large proportion of albumen, while in those made from veal the proportion of jelly preponderates.



[1, A portion of adipose tissue; 2, minute bags containing the fat; 3, a cluster of the bags, separated and suspended.]

The cells of the cellular tissue, as has been shown are continuous over the whole body; but each adipose vesicle is a distinct bag, having no communication whatever with any other. The cellular tissue is universally diffused; but the adipose is placed only in particular parts of the body; principally beneath the skin, and more especially between the skin and the abdominal muscles, and around some of the organs contained in the chest and abdomen, as the heart, the kidneys, the mesentery, and the omenta. In most of these situations some portion of it is generally found, whatever be the degree of leanness to which the body may be reduced; while in the cranium, the brain, the eye, the ear, the nose, and several other organs, there is none, whatever be the degree of corpulency. The uses of the fat, which are various, will be stated hereafter.

The third form of membrane is termed the *serous*. Like the adipose, *serous membrane* is a modification of the cellular, and, like it also, it is limited in its situation to particular parts of the body, that is, to its three great cavities, namely the head, the chest, and the abdomen. To the two latter it affords an internal lining, and to all the organs contained in all the three cavities, it affords a covering. By its external surface it is united to the wall of the cavity or the substance of the organ it invests; by its internal surface it is free and unattached; whence this surface is in contact only with itself, forming a close cavity or shut sack, having no communication with the external air. Smooth and polished, as seen above it is rendered moist by a fluid which is supposed to be exhaled in a gaseous state from the serum of the blood; and from this serous fluid the membrane derives its name.



[A portion of intestine, showing its external surface or serous coat.]

Though thin, serous membrane is dense, compact, and of great strength in proportion to its bulk; it is extensible and elastick; extensible, for it expands with the dilatation of the chest in inspiration; elastick, for it contracts with the diminished size of the chest in expiration. In like manner, it stretches with the enlargement of the stomach during a hearty meal, and contracts as the stomach gradually diminishes on emptying itself of its contents. It is furnished with no blood-vessels large enough to admit the colouring matter of the blood; but it is supplied with a great number of the colourless vessels termed exhalents, with the vessels termed absorbents, and with a few nerves. It indicates no vital properties, but those which are common to the simple form of the primary tissue. Its specific uses are to afford a lining to the internal cavities; to furnish a covering to the internal organs; by its polished and smooth surface, to allow a free motion of those organs on each other, and by the moisture with which it is lubricated, to prevent them from adhering together, however closely, or for however long a period they may be in contact.

The fourth form of membrane, the *fibrous*, named from the obvious arrangement of its component parts, consists of longitudinal fibres, large enough to be visible to the naked eye, placed parallel to each other, and closely united. Sometimes these fibres are combined in such a manner as to form a continuous and extended surface, constituting a thin, smooth, dense, and strong membrane such as that which covers the external surface of bones termed PERIOSTEUM, or which lines the internal surface of the skull (dura mater). At other times they form a firm and tough expansion (aponeurosis) which descends between certain muscles separating them from each other, affording a fixed point for the origin or insertion of neighbouring muscles; or which is stretched over muscles and sometimes over even an entire limb, in order to confine the muscles firmly in their situation, and to aid and direct their action. Fibrous membrane also constitutes the compact, strong, tough, and flexible bands used for tying parts firmly together, termed LIGAMENTS, principally employed in connecting the bones with each other, and particularly about the joints; and lastly, fibrous membrane forms the rounded white cords in which muscles often terminate, called TENDONS, the principal use of which is to connect the muscles with the bones, and to serve as cords or ropes to transmit the action of the muscle to a distant point, in the accomplishment of which purposes their operation appears to be entirely mechanical.

The fifth form of membrane, the *mucous* derives its name from the peculiar fluid with which its surface is covered, called mucus, and which is secreted by numerous minute glands, imbedded in the substance of the membrane. As serous membrane forms a shut sack, completely excluding the air, mucous membrane, on the contrary, lines the various cavities which are exposed to the air, such as the mouth, the nostrils, the wind-pipe, the gullet, the stomach, the intestines, the urinary organs, and the uterine system. Its internal surface, or that by which it is attached to the passages it lines, is smooth and dense, its external surface, or that which is exposed to the contact of the air, is soft and pulpy, like the pile of velvet. It bears a great resemblance to the external surface of the rind of a ripe peach

SUGAR-CANE.

The Sugar-cane must be considered as a native of China, since it has been pretty accurately shown that its cultivation was prosecuted in that empire for two thousand years before sugar was even known in Europe, and for a very long period before other eastern nations became acquainted with its use. For some time after this substance, in its crystalline form, had found its way to the westward, through India and Arabia, a singular degree of ignorance prevailed in regard to its nature, and the mode of its production; and there is reason for believing that the Chinese, who have always evinced an unconquerable repugnance to foreign intercourse, purposely threw a vail of mystery over the subject. Persons have not been wanting, even in modern times, who have approved of this anti-social spirit, as being the perfection of political wisdom; but is it not a complete answer to their opinion, that every nation which has cultivated commercial relations has been steadily advancing in civilization, and adding most importantly to the sum of its comforts and conveniences? while the inhabitants of China, although possessed of the greatest natural advantages, arising from variety of soil and climate, by which advantages they had so long ago placed themselves in advance of other people, have remained altogether stationary?

A knowledge of the origin of cane sugar was correctly revealed in the middle of the thirteenth century, by the celebrated traveller Marco Polo; though it was partially known much earlier. The plant was soon conveyed to Arabia, Nubia, Egypt, and Ethiopia, where it became extensively cultivated. Early in the fifteenth century the sugar-cane first appeared in Europe. Sicily took the lead in its cultivation; thence it passed to Spain, Madeira, and the Canary Islands; and shortly after the discovery of the New World by Columbus, this plant was conveyed to Hayti and Brazil, from which latter country it gradually spread through the islands of th West Indies.

The sugar-cane varies exceedingly in its growt depending upon the nature of the soil. In new an moist land it sometimes attains the height of twent feet. It is always propagated from cuttings. Th hoeing of a cane-field is a most laborious operatio when performed, as it must be, under the rays of tropical sun. Formerly this task was always effec ed by hand labour, but, of late years, where the n ture of the ground will admit of the employment o a plough, that instrument has been substituted, to th mutual advantage of the planter and his labourer The planting of canes does not require to be renew ed annually; in such a case, the utmost number o labourers now employed on a sugar plantation woul be wholly inadequate to its performance.

When the canes are fully ripe they are cut clos to the ground, and being then divided into conve nient lengths, are tied up in bundles, and conveyed t the mill. The canes, on being passed twice be tween the cylinders of this mill, have all their juic expressed. This is collected in a cistern, and mus be immediately placed under process by heat to pre vent its becoming acid. A certain quantity of lim in powder, or of lime-water, is added at this time t promote the separation of the grosser matters con tained in the juice; and these being as far as possibl removed at a heat just sufficient to cause the impuri ties to collect together on the surface, the cane-liquo is then subjected to a very rapid boiling, in order t evaporate the watery particles, and bring the syru to such a consistency that it will granulate on cool ing. Upon an average, every five gallons, imperia measure, of cane-juice, will yield six pounds of crys tallized sugar, and will be obtained from about on hundred and ten well grown canes.

When the sugar is sufficiently cooled in shallow trays, it is put into the hogsheads in which it i shipped to Europe. These casks have their bottom pierced with holes, and are placed upright over large cistern into which the molasses—which is th portion of saccharine matter that will not crystallize drains away, leaving the raw sugar in the stat wherein we see it in our grocers' shops; the cask are then filled up, headed down, and shipped.

The molasses which have drained from the suga together with all the scummings of the coppers, ar collected, and, being first fermented, are distilled fo the production of rum.

THE TEAZLE.

The teazle (dipsacus fullonum) is a plant of con siderable importance to our woolen manufacturers It is cultivated to some extent in the United State for the sake of its head. It is raised in hills, an throws up its heads in July and August; and these are cut from the plant by hand, with a knife pecu liarly formed, and then fastened to poles for drying the terminating heads are ready first, and are calle "kings;" they are larger and coarser than the oth ers, and fitted only for the strongest kinds of cloth and are about half the value of the best. The co lateral heads then succeed, and receive the name o "middlings," and are the prime teazles. Should th

[The Teazle.]

season prove moist, great injury ensues; but exposure to wet for any length of time ruins the head, which, by its peculiar construction, retains the moisture, and it decays. They cannot be stacked like corn, as pressure destroys the spines, and a free circulation of air is required to dry them thoroughly.

The teazle, perhaps, affords a solitary instance of a natural production being applied to mechanical purposes in the state in which it is produced. It appears, from many attempts, that the objects designed to be effected by the teazle cannot be supplied by any contrivance—successive inventions having been abandoned as defective or injurious. The use of the teazle is to draw out the ends of the wool from the manufactured cloth, so as to bring a regular pile or nap upon the surface, free from twistings and knottings, and to comb off the coarse and loose parts of the wool. The head of the true teazle is composed of incorporated flowers, each separated by a long, rigid, chaffy substance, the terminating point of which is furnished with a fine hook. Many of these heads are fixed in a frame; and with this the surface of the cloth is teased, or brushed, until all the ends are drawn out, the loose parts combed off, and the cloth ceases to yield impediments to the free passage of the wheel, or frame, of teazles. Should the hook of the chaff, when in use, become fixed in a knot, or find sufficient resistance, it breaks, without injuring or contending with the cloth, and care is taken by successive applications to draw the impediment out; but all mechanical inventions hitherto made use of, offer resistance to the knot; and, instead of yielding and breaking as the teazle does, resist and tear it out, making a hole, or injuring the surface. The dressing of a piece of cloth consumes a great multitude of teazles, it requiring from one thousand five hundred to two thousand heads to accomplish the work properly. They are used repeatedly in the different stages of the process; but a piece of fine cloth generally breaks this number before it is finished, or it may be said that there is a consumption answering to the proposed fineness—pieces of the best kinds requiring one hundred and fifty or two hundred runnings up, according to circumstances.

TALLOW-TREE OF INDIA.

A vegetable tallow, extracted by boiling from the fruit of the *Vateria Indica* tree, growing in Canara province, and others on the western coast of the peninsula of India, has lately been brought to London, in a very hard and tough cake. This singular substance, observes Dr. Babington, is a concrete inflammable, partaking of the nature of wax and oil, which, from its appearance, may not inaptly be termed, a tallow. It is in use only in the town of Mangalore, province of Canara, and is there employed medicinally as an external application for bruises and rheumatick pains, and likewise, when melted with the resin of the same tree, is used as a substitute for tar in paying the bottoms of boats. The method of preparing this material is simply to boil the fruit in water, when the tallow is soon found to rise to the surface in a melting state, and on cooling forms a solid cake. Thus obtained, the Piney tallow (Piney is the name of the tree which produces it) is generally white, sometimes yellow, greasy to the touch, with some degree of waxiness, almost tasteless, and has a rather agreeable odour, somewhat resembling common cerate. It melts at a temperature of 97½°, and consequently remains solid in the climate of India, in which respect it differs from palm or cocoa-nut oil; wrapped up in folds of blotting paper, and submitted to strong pressure, scarcely sufficient oil, or elain, as it is termed by M. Braconot, is expressed to imbue the inmost fold. Its tenacity and solidity are such, that when cast in a rounded form of nine pounds weight, (in which state the specimen was sent from India) the force of two strong men was not sufficient to cut it asunder with a fine iron wire, and even with a saw there was considerable difficulty in effecting a division. When manufactured into candles, it comes with facility from the moulds, thus differing from wax, which does not readily admit of being cast; it gives as bright a light as tallow, and has the advantage of that material in being free from unpleasant smell, and in not emitting a disagreeable odour when extinguished. It unites in all proportions with wax, spermaceti, and tallow; and forms compounds with the two former, intermediate in their melting points, according to the proportion in their ingredients, and better adapted to the purpose of making candles, than the pure and more fusible substance.

Sir Horace Vere, on being asked by the Marquis Spinola, a celebrated general, the cause of his brother's death is said to have replied, "He died, sir, of having nothing to do." "Alas!" said the Marquis, "that is cause enough to kill any general of us all."

FARMERS' DEPARTMENT.

WHEAT—IMPORTANT DISCOVERY.

The New York Farmer publishes a letter from the Rev. Mr. Coleman, announcing an important discovery from the destruction of the grain fly.

"The grain fly or insect, which, for a few years past has been destructive to wheat in many parts of the country, has this year extended its ravages, and excited wherever he made his appearance, very serious alarm. An eminent farmer in the State of New York wrote to me a year since that he must give up the cultivation of wheat, as his crops were so much injured that he hardly obtained a return equal to the seed sown. I knew another instance in the same State, where though the straw was large, and the appearance promising, yet from thirteen bushels sown not more than seven were obtained.

I have known other cases in which the whole field has been mowed and sold for litter; and in a recent excursion up the valley of the Connecticut I have heard complaints every where, and hundreds of acres so destroyed that the grain they would yield would hardly pay for reaping. Besides this, the same insect has destroyed many fields of rye in the same manner as the wheat, and had been found this year in the oats; the progress of the insect has been about forty miles a year; and a distinguished gentlemen in Vermont, a practical and extensive farmer, remarked that he feared they would on this account be obliged to relinquish the cultivation of small grain.

The habits of the insect have not yet been accurately observed. I myself have not yet seen the fly, but have seen the worms in the kernel after the grain has been destroyed. He is represented as being a small reddish fly, which is seen hovering over the wheat fields in immense numbers, while just in flower, and has been observed to light upon the kernel or bud, to ascend it, and then descending to the inner side, to deposite his egg between the stalk and the kernel. I purposely avoid the use of all scientifick terms, wishing to be understood by common farmers. From this egg the worm is generated which entirely consumes the grain while in the milk, leaving nothing but the husk in which are found several yellow worms about an eighth of an inch in length. As the work of destruction is now completed, any farther observations are of no importance, unless we can some way reach so as to destroy the germ of the insect. No preparation of the seed or ground, has yet been found effectual to this end.

The continuance of the fly upon the grain is thought not to exceed three or four days, and they are seen in great numbers just at night. Some farmers have found late sowing a partial security as the season for the flies has passed away before the wheat was in condition for their attack.

Spring wheat sown as late as the 7th and 8th of June, has been untouched, though in case of such very late sowing, the farmer will be fortunate if, in attempting to escape the fly, he does not get nipped by the frost.

I have now, however, the extraordinary happiness of announcing to the agricultural publick, what there is reason to believe, will prove an effectual, as it is a reasonable and feasible preventive. Should it prove effectual, the remedy will be worth millions and millions of dollars to the country. It was communicated to me on a late tour of agricultural inquiry and observation, by Dr. E. Lyman, of Lancaster N. H. an intelligent, enlightened, and practical farmer, whose crop of wheat usually averages from twenty-five to thirty bushels per acre. It consists in the application of fine slacked lime to the wheat just at the time of its heading out and flowering, at the rate of about a peck to the acre.

It is sown broadcast upon the wheat while the dew is on, and the field is rendered white with it. The best mode of applying it is with the hand, and for the person who sows it, taking his proper breadth or cast, to walk backwards, so that he may not cover himself with the lime. It must be sown while the wheat is wet or the dew is on, and the philosophy of its application is very simple. The maggot of the fly is deposited between the grain and the stalk. It is of course an animal substance. The lime or alkali, mixed with the dew is carried down upon, and neutralizes or destroys it. Dr. Lyman has now tried this preventive three successive years, and has invariably, as he assures me saved his crops, while those of his neighbours have been destroyed.

I visited, at the same time, the field of a Mr. Bellows, in the same town, who had been advised by Dr. Lyman to make this application. The field consisted of several acres. He tried it, and it has proved successful, and what is strongly confirmatory of the value of this remedy, is the fact that a field of rye, belonging to Mr. Bellows, adjoining the wheat, and I think within the same enclosure, which was not limed, has been nearly destroyed by the fly.

These are certainly very important experiments, and I make no delay in presenting them to the public. Dr. Lyman has promised me a more particular account of the experiment and result, and likewise Mr. Bellows, which as soon as received, I shall be happy to communicate. I have received indirect and indefinite communications that the same experiment has been successfully made in Gilmanton, N. H.; but I have not yet been able to obtain either the name or the details."

FOOT MARKS IN ROCKS.

A correspondent of the Richmond Enquirer published in that paper the following interesting communication:—

During an excursion which I lately made to the upper part of Orange county, in this state, I learned that there existed in that neighbourhood, a rock on which were found several impressions of human feet. The fact, in itself, would have attracted my curiosity; but I was induced, still more, to visit the rock from the knowledge, that such pehnomena had greatly interested the geologists of our country and of Europe. I thus wished, from personal observation, to add another fact to those already known, for the speculations of philosophy or the inductions of science.

The rock containing these impressions, is found on the estate of Mr. James Early, about six miles southwest of Stanardsville, in Orange county. It lies on the North branch of the Rivanna river, in a low ground called Buffalo meadow from a tradition that the last buffalo seen in that part of the country was killed there. The rock is *argillaceous* interspersed with silicious sand. It forms the embankment of the stream at that point, and that portion of it which contains the impressions projects into the stream, and is overflowed in high water. The impressions are those of a *child's feet*, and are seven in number. They have the positions relative to each other, which they would naturally occupy in walking. On the ledge of the rock projecting into the stream, are seen the heels of the feet and the furrow which they made, as they appear to have slipped into the water. The feet and toes about four and a half inches long, are most minutely and distinctly impressed. The breadth of the feet and the spread of the toes indicate that they had not been subject to the compression of the modern shoe. I cannot conceive that the most skilful sculptor could have cut any thing more true to nature than are these feet.

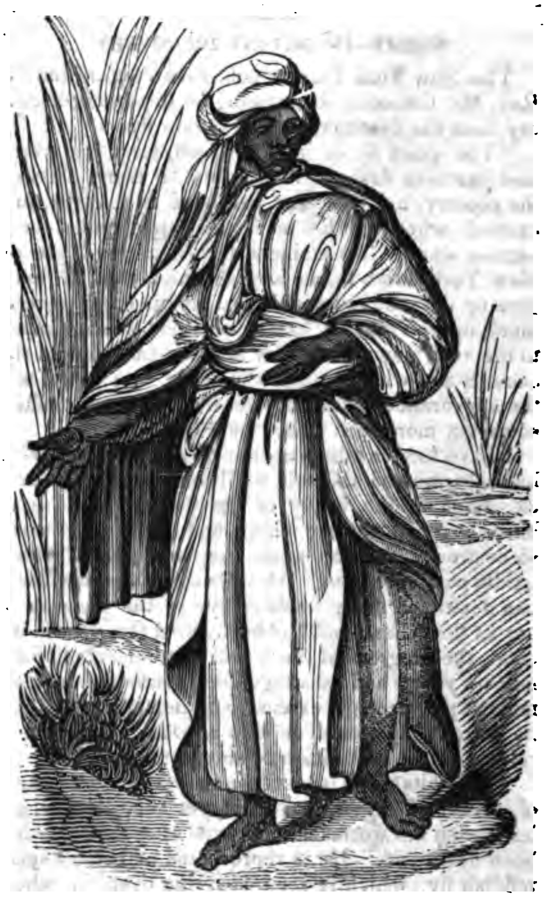
The question now recurs, are these impressions natural or artificial—were they really made by the feet of an Indian child, or were they sculptured by some aboriginal inhabitants? If they are the impressions of an Indian child's feet, the rock must, at that time, have been as soft as clay. This fact would be important to geology. If, on the other hand, these tracks were scuptured by the Indians, the inference is inevitable, that they must have had great skill in sculpture, as well as the proper instruments for the *Glyptick* art. But this supposition is defeated by the fact, that the Indians did not know the use of iron or steel. Their knives and arrow heads were made of stone, porphyry, hornstone and obsidian.

In Schoolcraft's Travels, there is a plate representing impressions of the two feet of a man, found on a compact calcareous rock, near St. Louis in Missouri. There is also an article upon them, in Professor Silliman's Journal of Science. Mr. Schoolcraft remarks, that "every appearance will warrant the conclusion, that these impressions were made at a time, when the rock was soft enough to receive them by pressure, and that the marks of the feet feet are natural and genuine." Governour Cass, who also saw them at Harmony, to which place the stone had been removed, concurs in opinion with Mr. Schoolcraft.

Several tracks of human feet are said to exist between Esopus landing and Kingston, on the Hudson river.—There is one impression, on a detached block of granite, near the former residence of Commodore Rodgers, in Washington. I have also heard of the existence of a similar impression, not many miles distant from the residence of William Clark Esq., of Orange county.

LIVING COSTUMES.

The accompanying cut is a faithful likeness of Omai, native of one of the Friendly islands, who acted as interpreter to Captain Cook in his third voyage round the world. His natural quickness and his fidelity rendered him of considerable use to the great navigator in his intercourse with the natives of the South seas. Omai was brought by Cook to England, where he was treated with much kindness and introduced into the best society. The ease and even elegance of his manners was an object of surprise;—but almost all the uncivilized people of this part of the world, and more especially the New Zealanders, have exhibited the same natural respect for the opinions and feelings of others which is the foundation of real politeness. Dr. Johnson speaks of Omai as showing the deportment of a well-bred gentleman. Omai was not a person of consequence, that is a chief, in his own country, where the distinctions of rank are all-important. We add the following remarks on Omai from "the New Zealanders," a volume published by the Society for the Diffusion of Useful Knowledge:—



[Omai. Painted by Sir Joshua Reynolds.]

"When Captain Cook, whom he had so long accompanied, left him, during his last voyage, at Huaheine, with every provision for his comfort, he earnestly begged to return to England. It was nothing that a grant of land was made to him at the interposition of his English friends—that a house was built and a garden planted for his use. He wept bitter tears; for he was naturally afraid that his new riches would make him an object of hatred to his countrymen. He took back many valuable possessions and some knowledge. But he was originally one of the common people; and he soon saw, although he was not sensible of it at first, that without rank he could obtain no authority. He forgot this, when he was away from the people with whom he was to end his days; but he seemed to feel that he should be insecure when his protector, Cook, had left their shores. He divided his presents with the chiefs; and the great navigator threatened them with his vengeance if Omai was molested. The reluctance of this man to return to his original condition was principally derived from these considerations, which were to him of a strictly personal nature. The habits amidst which the natives of this island are born, may be modified by an intercourse with civilized men, but they cannot be eradicated."

KENTUCKY BARBECUE ON THE FOURTH OF JULY.

BEARGRASS CREEK, which is one of the many beautiful streams of the highly cultivated and happy state of Kentucky, meanders through a deeply shaded growth of majestick beech woods, in which are interspersed various species of walnut, oak, elm, ash, and other trees, extending on either side of its course. The spot on which I witnessed the celebration of an anniversary of the glorious Proclamation of our Independence is situated on its banks, near the city of Louisville. The woods spread their dense turfs toward the shores of the fair Ohio on the west, and over the gently rising grounds to the south and east. Every open spot forming a plantation was smiling in the luxuriance of a summer harvest. The farmer seemed to stand in admiration of the spectacle: the trees of his orchards bowed their branches, as if anxious to restore to their mother earth the fruit with which they were laden; the flocks leisurely ruminated as they lay on their grassy beds; and the genial warmth of the season seemed inclined to favour their repose.

The free, single hearted Kentuckian, bold, erect, and proud of his Virginian descent, had, as usual, made arrangements for celebrating the day of his country's Independence. The whole neighbourhood joined with one consent. No personal invitation was necessary where every one was welcomed by his neighbour, and from the governor to the guider of the plough all met with light hearts and merry faces.

It was indeed a beautiful day; the bright sun rode in the clear blue heavens; the gentle breezes wafted around the odours of the gorgeous flowers; the little birds sang their sweetest songs in the woods, and the fluttering insects danced in the sunbeams. Columbia's sons and daughters seemed to have grown younger that morning. For a whole week or more, many servants and some masters had been busily engaged in clearing an area. The undergrowth had been carefully cut down, the low boughs lopped off, and the grass alone, verdant and gay, remained to carpet the sylvan pavilion. Now the wagons were seen slowly moving along under their load of provisions, which had been prepared for the common benefit. Each denizen had freely given his ox, his ham, his venison, his turkeys, and other fowls. Here were to be seen flagons of every beverage used in the country; "La belle Riviere" had opened her finny stores; the melons of all sorts, peaches, plums, and pears, would have sufficed to stock a market.

In a word, Kentucky, the land
supplied a feast for her children

A purling stream gave its wat
grateful breezes cooled the air.
from the newly kindled fires rc
fifty cooks or more moved to an
their trade; waiters of all quali
the dishes, the glasses, and the
vases filled with rich wines. "
filled many a barrel for the crow
roasted viands perfume the air, ar
conspire to predict the speedy co
banquet such as may suit the vig
American woodsmen. Every stew
ready to receive the joyous group
ment begin to emerge from the darl
woods.

Each comely fair one, clad in pu
advancing under the protection of
the neighing of their prancing ste
how proud they are of their burden.
riders leap from their seats, and the h
ily secured by twisting their bridles
As the youth of Kentucky lightly and
towards the Barbecue, they resemble
of nymphs and disguised divinities.
mothers smiled upon them, as they fo
liant *cortége.* In a short time the gro
with merriment. A great wooden
with iron hoops, was now crammed wi
powder; fire was conveyed to it by me
and as the explosion burst forth, thousa
huzzas mingled with its echoes. Fr
learned, a good oration fell in proud an
words on every ear, and although it pro
equal the eloquence of a Clay, an Everet
or a Preston, it served to remind every
present of the glorious name of Washin
and drums sounded the march which h
him to glory; and as they changed to ou
"Yankee Doodle," the air again rang wi
tions.

Now the stewards invited the assem
to the feast. The fair led the van, and
placed around the tables, which groaned
profusion of the best productions of the c
had been heaped upon them. On each lov
attended her gay beau, who in her chanc
long glances ever watched an opportunity
his happiness. How the viands diminish
the action of so many agents of destructio
not say, nor is it necessary that you should
the long recital. Many a national toast wa
and accepted, many speeches were delive
many essayed an amicable reply. The lad
retired to booths that had been erected at a l
tance, to which they were conducted by th
ners, who returned to the table, and havi
cleared for action, recommenced a series of
rounds. However, as Kentuckians are neith
nor long at their meals, all were in a few
replenished, and after a few more draughts fr
bowl, they rejoined the ladies, and prepared
dance.

Double lines of a hundred fair ones extende
the ground in the most shady part of the
while here and there smaller groups await
merry trills of reels and cotillions. A burst of

from violins, clarionets, and bugles, gave the welcome notice, and presently the whole assemblage seemed to be gracefully moving through the air. The "hunting-shirts" now joined in the dance, their fringed skirts keeping time with the gowns of the ladies, and the married people of either sex stepped in and mixed with their children. Every countenance beamed with joy, every heart leaped with gladness; no pride, no pomp, no affectation, were there; their spirits brightened as they continued their exhilarating exercise, and care and sorrow were flung to the winds. During each interval of rest, refreshments of all sorts were handed round, and while the fair one cooled her lips with the grateful juice of the melon, the hunter of Kentucky quenched his thirst with ample draughts of well tempered punch.

I know, reader, that had you been with me on that day, you would have richly enjoyed the sight of this national *fête champêtre.* You would have listened with pleasure to the ingenious tale of the lover, the wise talk of the elder on the affairs of the state, the accounts of improvement in stock and utensils, and the hopes of continued prosperity to the country at large, and to Kentucky in particular. You would have been pleased to see those who did not join the dance, shooting at distant marks with their heavy rifles, or watched how they shewed off the superiour speed of their high bred "old Virginia" horses, while others recounted their hunting exploits, and at intervals made the woods ring with their bursts of laughter. With me the time sped like an arrow in its flight, and although more than twenty year elapsed since I joined a Kentucky Barbecue, my spirit is refreshed every fourth of July by the recollection of that day's merriment.

But now the sun has declined, and the shades of evening creep over the scene. Large fires are lighted in the woods, casting the long shadows of the living columns far along the trodden ground, and flaring on the happy groups, loath to separate. In the still clear sky, began to sparkle the distant lamps of heaven. One might have thought that Nature herself smiled on the joy of her children. Supper now appeared on the tables, and after all had again refreshed themselves, preparations were made for departure. The lover hurried for the steed of his fair one, the hunter seized the arm of this friend, families gathered into loving groups, and all returned in peace to their happy home.

Audubon.

SINGULAR EFFECTS OF INFECTED AIR IN A SLEEPING ROOM.

M. P——, an architect of Vienna, went on business to the country seat of Baron de ——. One of the most beautiful chambers of the chateau, was assigned him for his lodging apartment. Scarcely had he laid himself down before he seemed to feel as if he was taken up from his bed and carried about the chamber hither and thither; at one time he found himself upon the bed; at another, beneath it; now he was near the door or the windows; now in the midst of an enormous fire chimney; at the same time there was not light enough to enable M. P—— to distinguish clearly every object in the room. It was not an illusion; he felt the movement, he recognised every place in the chamber. The next morning he appeared at the breakfast table, pale and wan as after a night without sleep; but from a natural delicacy he gave only evasive answers to to the questions of his host.

The second night brought the same apparitions, and the next day he was more pale, and cast down than before, but still came to no explanation.

The third night was like the first; and his livid cheeks and sunken eyes excited the next morning, uneasiness in the family. The Baron took M. P—— aside, and urged him to tell him frankly if he had not experienced something disagreeable in his sleeping chamber. Then the latter related all that had occured, and the Baron confessed that for a long time this chamber had been closed, that no one would occupy it; and that the domesticks dared not go there.

After this explanation, M. P—— requested permission to examine the house. He found that the chimney of the house was closed up from within, so that all air was excluded; the windows beside were always kept shut, and the doors were scarcely ever open; he remarked also that the chamber was situated in a wing of the building, and surmounted by a roof through which there was no perceptible opening. He concluded that the mephitick gas, inclosed within the garret had penetrated into the room through some old wainscotting; there the air became corrupted, and with nothing to renovate it, the brain was effected by it in such a way as at excite a momentary delirium which presented to the imagination these nocturnal views.

M. P—— made a report upon his observations, and set himself to work to remedy the evil. The windows were opened; a current of air was established between the room and the chimney way; an opening made through the roof. The air which came through this aperture was of a quality so mephitick, that one of the workmen was taken sick, and would have fallen had it not been for the aid of his companion.

The same night, M. P—— slept in the chamber. As he had been without rest for three days, he slept better than ever, and nothing more was heard about apparitions.

THE SUN

Among the celestial bodies, the sun is certainly the first which should attract our notice. It is a fountain of light that illumes the world! It is the cause of that heat which maintains the productive powers of Nature, and makes the earth a fit habitation for man! It is the central body of the planetary system, and what renders a knowledge of it still more interesting to us is, that the numberless stars which compose our universe appear, by the strictest anology, to be similar bodies. Their innate light is so intense, that it reaches the eye of the observer from the remotest regions of space, and forcibly claims his notice. The sun, by its attractive power, retains the planets of our system in their orbits. From all these, we may have a clear idea of the vast importance and powerful influence of the sun on its planetary system, and the beneficent effects we feel from the diffusion of its rays.

USEFUL KNOWLEDGE.

New Principle of Economy in Manufactures.—A recent discovery has added a new feature to the commercial industry of France. Formerly the residuum from the distillery was wasted, it not being known that it could be put to any use. A potash manufactory, however, has just been erected near Valenciennes, which is to be alimented by the residuum from the distillery. This is the first establishment of the kind, and it is now in full activity.

Improvement in Paper-Making.—At a recent sitting of the Society of Arts, Mr. E. Cowper addressed the meeting on recent improvements in paper-making. He referred to the origin of paper-making, and to the various plants (drawings of which he exhibited) from which it had been manufactured. Speaking of the strength of writing-papers, he produced a sheet of post quarto, the ends of which he had pasted together, and he raised half a hundred weight with it. The same sheet, he said, had lifted a man off the ground. He then adverted to Mr. Babbage's experiments for ascertaining the colour of paper least injurious to the sight, which he stated to be green; though in printing papers, the type was never more effective than when used on white. He explained the nature of the machinery used in the manufacture of the article, and observed, that, though objections had been urged against it on its first introduction, it would now be impossible to produce the required supply by manual labour. He showed the construction of the frame for making wove paper, and perfected two sheets in the presence of the Society. In his observations on the length of paper which had been manufactured, he mentioned that one sheet had been completed which would reach four miles; and that an eminent manufacturer, whose mills were visited by the Duke and Duchess of Sutherland, had a sheet made to cover the lane they had to pass, from the proprietor's residence to the works, of three quarters of a mile, and which answered all the purposes of a carpet. He mentioned, that in the early attempts to manufacture the article, a petition had been presented by the proprietors of mills at Rome to the Pope, praying that some means might be devised to turn their stock into more advantageous property, their warehouses being full, while the manufacturers were absolutely in want of the necessaries of life; and, added Mr. Cowper, the amazing stock referred to was equal to the consumption of about three of our penny magazines. Respecting glossy papers, he observed, if they were too dry, they would crumble into dust; and he particularly eulogized Mr. Dickinson's improvement in paper-making. London paper.

Vinegar-Tree.—We have the molasses or sugar-tree among us in the shape of the rock or sugar-maple, which many of our farmers make use of to good advantage, and many more might, did they know how to improve the good things which providence has supplied them with. In addition to this, we have, undoubtedly, a good vinegar-tree, though we have never tried the experiment in order to ascertain the facts, and the time may now, perhaps, be past for doing it this year. While perusing the last number of Silliman's Journal of Science, we were struck by the following remark from Pr F. Emmet, while speaking of the properties mick acid: "Being lately very much struc the odour peculiar to the red-oak, I applied closely to the transverse section of some fr logs, and to my astonishment, sucked up wi a pure and grateful vinegar, sharp to the tas so like the best specimens of the acetick ac distillation could not have improved its q The tree was full-grown and sound and felle month of February, and the wood examined as cut. The acetick acid existed more abu in the red portion next to the heart."

Now, it is well known that the sap in the is abundant, perhaps as much so as in the Would it not, if tapped at the time the m yield a quantity of pure vinegar sufficiently supply a family for a considerable part, or whole year? We wish some one who has portunity would try the experiment, and let u the result. The acetick acid is much used arts, and if it can be obtained in this simple a good quality, it will be a discovery of consi importance. Maine F

Mode of Warming Factories.—In the re port of the parliamentary committee, it is tr prising that not a syllable is said about the of warming and ventilating apartments e in the factories, although they afford unques the best models for imitation, being the re innumerable experiments made on a ma scale, with all the lights of science, and al sources of our ablest engineers. The wa effected by horizontal ranges of cast iro pipes, properly supported or suspended, give free play to their expansion and co from alterations of temperature, as well as the equable distribution of low-pressure st the ready efflux of the water of cond There cannot be a single doubt of this syst the only one which can, with safety, certa economy, be used in preparing in one or m chambers a body of genial air, to be there fused through the houses of parliament subordinate committee-rooms. The only po can admit of discussion is, the mode of the atmosphere, or what is commonly cal lation. In this respect, also, the engine metropolis will find themselves outstripped of Manchester and some other factory dis Architect

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For ensuring the sweetness of fish convey carriage to any distance.—The belly o should be opened and the internal parts with powdered charcoal. The same ma restore even putrescent fish to perfect The inhabitants of Cadiz, and other cities ter has to be kept in tanks for culinary this simple method of purifying their wat on this subject it may be well to add, th well pulverized, is the best tooth-powde be used, both to keep the teeth white a their decay. To pulverize it, heat it r shovel and then put in it a bottle of pur you use the water with a tooth-brush better.

CONFERVA, OR NATURAL PAPER.

Nature, which is ever bountiful in supplying our wants, has not only provided us with numerous materials for making paper, but also shewn us in what manner vegetable substances may be formed into paper by the operation of Nature herself, in the plant which has received the name of Conferva from Linnæus and other naturalists who followed Pliny, which is to be found plentifully on the top of the water in brooks, rivulets, ponds, ditches, &c.

This discovery was unexpectedly made by Mr. Senger, of Germany, as he was walking on the borders of a small brook, when he found both shores on the sides of the hedges covered with a slimy substance, which the not-long-before-overflowed brook had there deposited. The surface of the water was covered anew with a yellowish green vegetable, and in such places where the brook had bendings, lay considerable quantities of this fine vegetable production piled up in heaps, which gave additional beauty to the blooming shores of the flowing brook. This covering extended on the surface of the water was not only a resting place for insects of various sorts, but as Nature intends every where to give a multiplicity of advantages, he soon found, by frequently resorting to the spot, that this substance contained a proper material for making paper, and what was more surprising, a paper prepared by Nature alone, without the assistance of imitating processes.

This peculiar web contains innumerable fleecy parts of vegetation, which are generated, in the first part of the spring, on ponds and other standing waters, detaching themselves from the bottom and rising to the surface, where they appear as a handsome green and yellow covering. After these fleecy particles have remained for some time on the watery mirror, by the heat of the sun and the changing degrees of the cold and warmth of the water, they become more united and felted together, bleached and at last turned into a tough paper-like covering. Or, if this fleecy substance is mixed together and carried away by sudden inundations, occasioned by heavy rains, and deposited on the shores, it appears then like a thin jelly or slime, which after it has undergone several changes, naturally produced by the contents of air and water, turn into a kind of paper which resembles the common sort; or, where it has been produced on clean water, it is not unlike a superiour paper, of which some may be gathered nearly as white as writing paper.

Must we not, with humble submission, still more revere the hand of the all-wise Creator in the works of Nature, when we find that He proceeds, in this operation, in the same manner as the paper-maker in his mill, when he attempts to prepare paper out of rags. This fleecy substance rises from the bottom of the water, and separates from its origin and vegetation, which is the first process; these materials are then prepared, upon the surface of the water, by the apparently invisible contents of all waters (which are in some more in others less), by the softest of waters, rain, by the refreshing air of the night, by the heat of the sun, and by the glutinous and oily substances. The waves or motion of the water reduces it into the smallest particles, without destroying its texture, like a pulp made of rags, when ground in the paper-engine. The grassy shore receives, at last, this paper, manufactured by water alone, like the artist who scoops in the paper-mill the prepared materials upon frames out of the vat, and deposits it upon hairy felts, in order to press and dry it. This river-paper is now completely fabricated by Nature, so as to be fit for writing or printing, if only taken from the surface of the water when ripe (which is easily ascertained by taking a handful, pressing the water out, and finding it fibrous), hung up and dried, and smoothed with an iron. Linnæus says that there are twenty-one sorts of conferva: but of these the best adapted for the purpose are conferva rivularis, conferva bullosa, and conferva reticulatis, which can be gathered in abundance in summer and autumn, being the periods when they are ripe, purified, and united by the warmth of the sun and by oily substances, framed likewise in the water by Nature.

This phenomenon extends itself over every part of the globe, and thus in a humble plant was discovered a secret, in the ineffectual pursuit of which our ancestors have spent many centuries. Nature, which lies open to every eye, is the most excellent school of all for acquiring wisdom; she forms the philosopher, and is the first channel by which the artist and chymist obtain knowledge and ability; an astonishing light streams forth from the active store of Nature into our organs, and her aim is to promote, step by step, decency and perfection in the moral world, if attended to, comprehended, and properly applied. This discovery may suppress the prejudice and self-conceit of those who appropriate their inventions alone to their own extended wisdom, and teach man his own feebleness and entire dependence upon Nature, who only discloses her secrets to those who cast an active and penetrating eye on her various operations

STABILITY OF THE MAGNETICK NEEDLE IN JAMAICA.

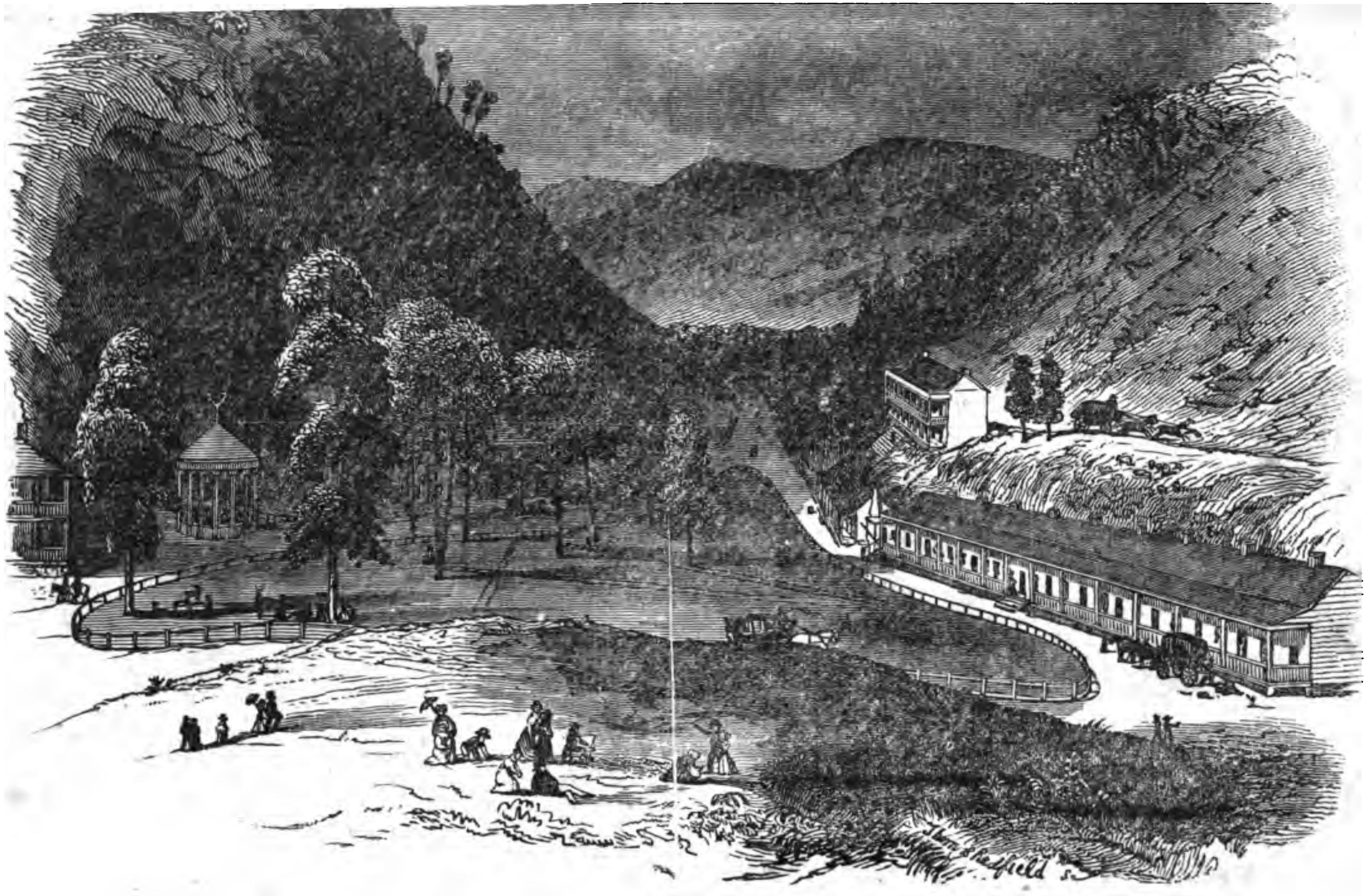
A very remarkable circumstance in the history and theory, of the compass is noticed as occurring in the undisturbed stability of the magnetick meridian in the island of Jamaica. Ever since the year 1660, the compass has never varied in that island.

Of the grants of land made at that period, maps were laid down on the then magnetick meridian, and its direction remains the same to this day. Since the original grants, new maps on new scales have been constructed, and all of them invariably agree with the earliest ones in the direction of the needle, which is about six degrees east.

If the boundary lines passed through a forest, some of the trees of which were marked, such of the marked trees as are still standing, are found to be coincident with the present meridian. The districts were originally laid out by the cardinal points, and when examined now by compass, they are found to be still the same.

Such remarkable facts, so contrary to general experience, discover to us how little is really known of the science of magnetism. And as so much depends on a complete knowledge of the principles of the magnetick variation, this con-variation is submitted to the consideration of every friend of useful science.

Every day seems to add something to our knowledge of magnetism. Among the interesting new facts on this subject, we may mention the discovery of the magnetick pole, and the obtaining an electrick spark from a magnetick ring.



SULPHER SPRINGS, VIRGINIA.

WHITE SULPHUR SPRINGS, (Va.)

Our frontispiece, a view of the White Sulphur Springs in Virginia, is from an extremely accurate picture painted on the spot, by that distinguished artist, George Cooke, Esq. It represents the spot which is the annual resort of an immense concourse of fashionable people and invalids from every part of the United States, but more particularly from the southern, south-western and middle states.

The White Sulphur springs take their name from the colour of the precipitate in the bottom and sides of the well from which the water is drunk. They are situated in the county of Greenbriar, in a hilly, and mountainous region of country, thirty-seven miles south-west of the Hot Springs. There are two gums, as they are called or small wooden reservoirs into which the water rises and whence it flows, after a short distance into Howard's creek, a branch of the Kenhawa river. A correspondent of the Newark Sentinel remarks, "The customs of this watering place are delightful. Free and friendly intercourse is the standing regulation, and every one while here, is under an implied obligation to contribute something at least to the common enjoyment. The company is quartered in little cabins, built some of brick and some of wood, one story high with separate apartments for different families, where you can be as retired as you please. They visit from breakfast (7 A. M. until 10 P. M,) and the door of your cabin being open is the signal that you are "at home."

"The spring issues forth in a little valley, situated on the western side of the main Alleghany ridge, which is the dividing line between the courses of the eastern and western waters, for this spring sends its waters towards the Gulf of Mexico; and the sweet spring, distant only eight miles in a direct line, emits its copious stream towards the Atlantick Ocean. A beautiful temple of the dorick order is erected over it —circular in form—about thirty five feet in height; its dome supported by twelve large pillars, and surmounted by a figure of Hygeia holding a cup of the all-curing water in her right hand, and grasping a viper by its throat with her left. The figure is large as life and beautifully sculptured or rather *carved*, for it is of wood, though many suppose it of marble. Upon the pedestal is inscribed the name of its donor, *S. Henderson*, Esq., of New Orleans.

"The cabins are located upon three sides of an oblong square, nine hundred feet in length, by four hundred in width, the spring and bath houses, in its rear, forming the lower extremity of the square. The centre is studded with noble forest trees, under which are seats for loungers. The view from the head of the lawn is most beautiful. The eye first takes in the rows of cabins with their neatly painted piazzas in front; then observes the dome and figure of the temple, standing out in bold relief from the deep foliage of the trees behind, and then stretches on until it strikes the base of one of the mountains of the Alleghany on the right, along whose summit it ranges until it meets with another and higher "spur," along which it still looks until it rests, at the distance of several miles, but not remaining, upon a lofty peak, which excludes from view all else beyond. This you do not regret, for between it and the spot you occupy, there is enough for your delighted vision to feast upon again and again. The view
never tires, and every time you l
discover new beauties in the landsca
visit this spot, look out from the b
derson's cabin," in Louisiana Row,
if you ever gazed upon a more lovel

"The spring is contained in an
about seven feet in length, five feet
and a half deep. Its sides are covere
deposite from the sulphurous water
is formed of the rock from whence it
water has the flavour of a half boil
egg, and is classed among *cold* hy
waters, but it is the only thermal sul
in the mountains of Virginia, its tem
sixty four degrees Fahrenheit."

Dr. Bell, observes, "Rouelle mak
the water to contain the following sub
I give in more modernized terms, witl
professing to be much of a chymical p

Sulphuretted hydrogen,	
Carbonick acid,	
Carbonate of lime,	12
Sulphate of magnesia	5
Sulphate of lime,	2
Muriate of lime,	1½
Iron,	1
Sulphur precipitated,	¼

"There is not much uncombined sul
drogen gas, or hepatick air, as Rouelle
holding iron in solution also modifies i
and renders it more stimulating than th
line sulphurous water.

"The White Sulphur springs have be
sorted to by invalids suffering from dyspe
ick hepatitis, the slow fever following re
ious, or ill-cured intermittent fevers; chr
matism, cutaneous diseases, uterine de
such as obstructed menstruation and fluo
dyspepsy unconnected with chronick in
and fixed pain of the stomach, these
have an excellent effect; and especially if,
ten the case in the middle and southern
disorder be connected with obstructions o
and enlarged spleen. Persons who have
dyspepsy by excesses in eating too mu
food and drinking distilled and fermented
they restrict themselves to simple food in
quantities, and use no other fluid than th
and common water, have every thing to ho
a residence of a few weeks at the White
springs. The jaundiced skin will here ofte
its natural hue, the temper its wonted even
most of the other unpleasant bilious sym
they are called, will disappear by a suitable
ick course at this favoured spot. That state
ing in peculiar debility and nervousness, a
neous eruptions, from the excessive use of
will be removed by the same means.

"The great drawback to the benefits deriv
visiting the White Sulphur springs, is the
suitable conveniences for bathing. That p
should exist against the use of the water,
purpose, of the common temperature of the
is not surprising, even had we not heard of
which its injurious if not fatal effects have
But no such objection could apply were th
raised to a tepid or warm temperature, and

niences afforded for using it as a bath. Even the substitute of sponging the entire surface of the body with the sulphurous water of a convenient heat, can not well be done, on account of the limited room and want of privacy in the cabins; in which for the most part persons visiting the springs lodge. The necessity of adding the bath to the internal use of this mineral water is the more obvious from the fact, that in all the diseases for the cure of which it has acquired reputation, it is of the utmost importance to restore and preserve the functions of the skin.

"There is, however, one great resource in this difficulty; and it is one which is peculiar to this district of country. At a distance easily passed over in a day's ride, the invalid finds thermal waters—the Hot springs, in the warm bath of which he can enjoy the luxury and benefit from bathing. The skin in this last place, and the internal organs, in the former, are each, in turn, placed in circumstances the most favourable to a restoration of their healthy state In chronick rheumatism and in cutaneous diseases, this alternate subjection to a period of warm bathing and a course of drinking sulphurous water is imperatively required to insure permanency of cure."

THE PLANTAIN.

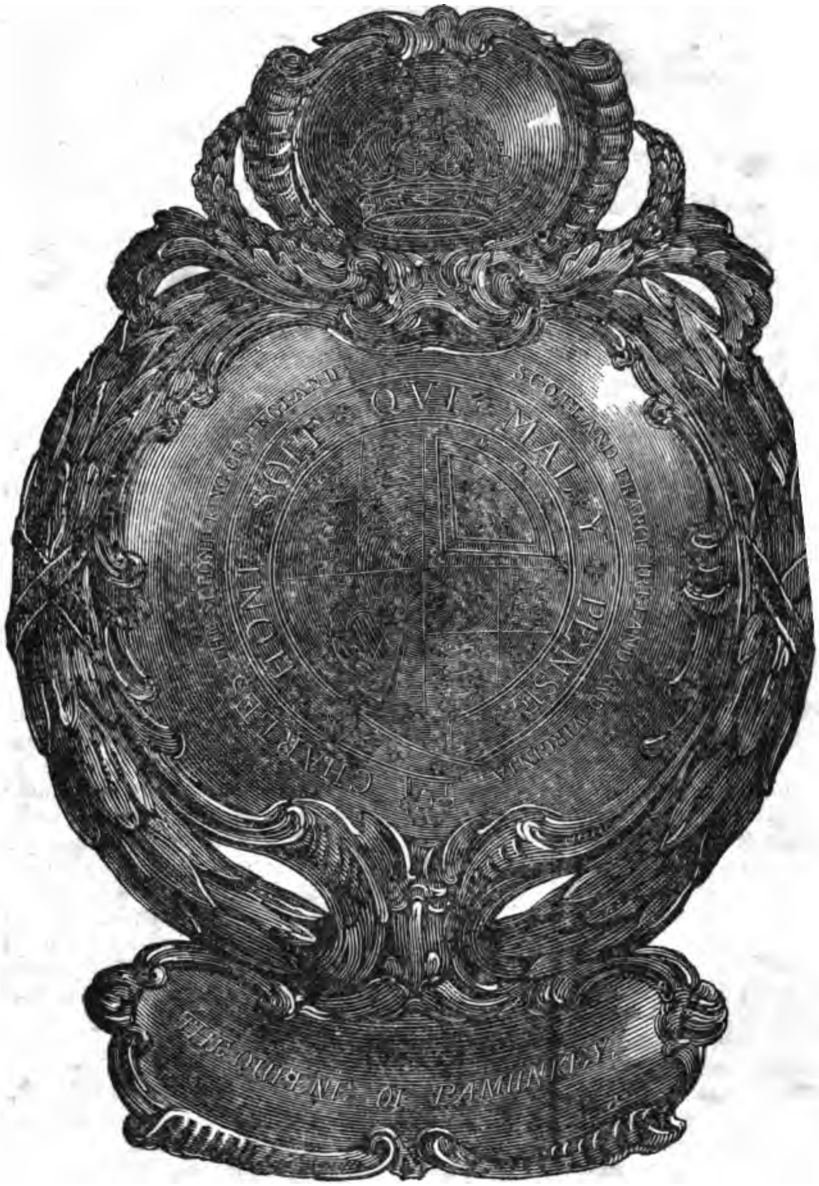
The cut above represents one of those valuable trees which are found in most tropical climates; being a species of the banana, known by the botanical term of *musa paradisiaca.* The stem of this plant is soft and herbaceous: it is fifteen or twenty feet high, while the leaves are extremely large being frequently six feet in length, and two in breadth. The flowers are borne on a spike which is nearly four feet long and nodding. The fruit which succeeds the fertile flowers, is eight or nine inches long; it is at first green but when ripe it has a pale yellow colour, and has a luscious taste. The tree is extremely useful, and as some of the plants are in bearing most of the year, it forms the entire sustenance of many of the inhabitants of tropical climates. If intended to be used as bread; it is roasted or boiled, when for this purpose full grown plants are selected; sometimes the ripe fruit is made into tarts; or it is sliced and fried with butter, or preserved as a sweetmeat. It is estimated that thirty-six plantains will support a man a week.

FLAX.

Flax is an extensive genus of annual and perennial herbs, found in many different parts of the world. The most useful is the *Linum usitatissimum* of Linnæus; an annual much cultivated in America and also in many parts of Europe. A most useful oil is expressed from the seeds, and the residue called linseed cake is used as one of the most fattening kinds of food for cattle. But the filaceous substance obtained from the stalk is the staple material of the linen manufacture. Lint is the common name and is an agricultural plant. It is sowed on clean and well prepared ground in the spring, flowers in the summer, and ripens its seed in the autumn. When stripped of its capsules, the stalks are tied up in bundles and steeped in water till the woody part becomes fragile, so that it may be broken or bruised in a mill, to prepare it for the various processes of the flax dresser.

"The power of empires, which does not avail itself of the best auxiliaries of knowledge which the age supplies, will never abide the test of trial with nations, which bring all such resources into the field."

AMERICAN ANTIQUITIES.


CHARLES THE SECOND KING OF ENGLAND SCOTLAND FRANCE IRELAND AND VIRGINIA
HONI SOIT QUI MAL Y PENSE
THE QUEENE OF PAMUNKEY

We regret that we are unable to furnish a complete history of the remarkable curiosity, a figure of which is presented above. The following description of it, is from the pen of an attentive correspondent, to whom the proprietors of the Family Magazine are under many obligations, for his polite attention. He remarks, "There is now before me a silver frontlet, obviously I think part of a crown. The engraving upon it is first the *crest*, a crown surmounted by a lion passant. The escutcheon as delineated, field argent. Beneath this is a scroll containing the words THE QUEENE OF PAMUNKEY.

Those non descript things in the dexter chief and sinister base quarters are lions passant, and is bordered with a wreath. Just within th you will see inscribed, "Charles the second England, Scotland, France, Ireland and The ornament was purchased of some India years ago by Alexander Morson of Falm grandfather of the present proprietor.

You know that the Pamunkey tribe still o its old ground in King William County, exe to a certain extent its own laws, an "*impe imperio*." J

FREDERICKSBURG, VA.

AN AFFECTING STORY.

It was in the year 183– that a gentleman distinguished for his talents and intellectual abilities, suddenly resolved to abandon the habit of intemperance to which he had long been addicted. He was a remarkable and extraordinary man—his talents were of the most extensive character. In person he was handsome, and possessed of every exteriour grace that could please or attract the eye. His manners were of the most pleasing and fascinating kind, and his conversation was of that varied and eloquent nature, that his company was in every condition of society desired. No man was more deeply versed in classical learning; and in the various branches of scholastick philosophy he was deeply profound. In the higher branches of polite literature he had considerable acquirements, and indeed in every branch of intellectual knowledge he was thoroughly read. He had been compared to Bolingbroke, who it was well known by the profoundness of his philosophy and the elegance of his manners, could grace and give a charm to the drawing-room, as well as teach lessons of wisdom in the Academy or Lyceum. At an early age he had married a beautiful and charming woman, and from the union of two persons so well adapted to each other, it might readily be supposed that the stream of happiness would continue uninterruptedly to flow; but alas! it was soon discovered that the possession of the highest attainments, and the most exalted genius afforded no security against the encroachments of a vice whose course is marked by misery, and whose end is death. For years he was a complete victim to this degrading and unhappy vice, and from a considerable loftiness of reputation, had sunk into the character of a common drunkard. Poverty had entered his domicil, and he was frequently the subject of the most pressing want. His wife's jewelry had long disappeared at the pawnbroker's, and his own extensive and valuable library had met with the same fate. Article after article of the furniture had disappeared, and nothing now remained but that which was secured by the law. His wife, who in her person had presented all that *en-bon-point* of appearance which marks health, had wasted away to a mere shadow. Her disposition, which had formerly been lively and vivacious, was now sorrowful and melancholy, and the children exhibited that raggedness of dress, which distinguishes the offspring of those who are intemperate.

A more affecting scene can hardly be imagined than that which occurred on a cold and bleak day in December, when the mother was seen pressing an infant to her breast, crowding to a few embers which still remained on the hearth. Several small children surrounded her, crying with the cold, and begging their mother to give them some bread; but alas! she had none to give them. Along side in one corner, covered with a worn out rag lay the husband in a beastly state of intoxication with a jug of the fatal poison at his head—a more distressing and heart-rending scene cannot possibly be conceived —it was one calculated to draw tears from the most obdurate hearts, and soften the most adamantine soul. There lay the man whose lofty intellect and splendid talents were well suited to adorn a senate or rule a nation, a victim to the intoxicating draught which has destroyed thousands.

What is just described is no fiction; it is truth without the aid of imagination or the colourings of fancy. Twelve months from the period at which our story commences, on a cold winter evening, might be seen in a beautiful and snug little parlour sitting on a sofa, the same gentleman dressed in a costume which indicated that he had not fallen entirely a martyr to that poverty which always results from the habit to which he had been addicted. His brow was thoughtful, and an acute observer might perceive a shade of melancholy pass over his countenance. In the same room, seated at a centre table, was his wife, attired in a neat and tasteful dress, reading one of those beautiful annuals of the season. Several beautiful children were playing in the room, and their cheerful looks and comfortable clothing indicated that poverty had no residence there. This little parlour displayed indeed no tokens of wealth, but evidently showed signs of comfortable enjoyments. Two beautiful vases adorned the mantle piece, and underneath was seen the vivid light of an animating coal fire, before which, on a rug, lay a favourite dog, who seemed to participate in the happiness which seemed to pervade the apartment. The wife looked up, and casting a glance at her husband, observed a gloominess of countenance which at once excited her attention. She closed the book which she had just been reading, and going to him, threw her arms around his neck, and tenderly inquired if any thing disturbed him. It was some time before he made any reply, and then he said, "my dear, I must have half a pint of brandy." The wife became immediately agitated, and in solicitous accents, besought him not to send for that poison which had formerly been nearly his ruin. She, who but a few moments before, had been realizing of perfect security, was now convulsed with sorrowful anticipations that a renewal of her husband's former pernicious habits was to take place. Her bosom heaved with alarm, and as the tears gushed from her eyes, she implored him whom she had loved and adhered to with a devoted fidelity, through good and evil report, in disgrace and poverty, that he would not again tempt by a single indulgence, a recurrence to habits which must destroy their present felicity, and forever annihilate their future hopes. The children partook of the sorrow of their mother; they left their innocent amusements, and with tears in their little eyes begged their papa not to get any more of that stuff which made them poor, and their mamma cry. But the husband appeared to be insensible to the affectionate remonstrances of his wife and the artless persuasions of his children. His eldest daughter, who on former occasions had gone on this errand, was now compelled to perform this; the brandy was obtained, and his wife looked with a fearful and painful forboding upon the decanter which contained the fatal poison. He looked upon the brandy, and approaching the table with a chair, he sat down and took the decanter in his hand; he held it up to the light, and observed how beautiful its colour. He then apostrophised thus; "O how I have loved thee, thou enticing and misery dispensing spirit; thou hast been my bosom companion from morn till night and from night till morning. I have loved thee with the love surpassing that of woman, and I have grieved as a mother grieves over the dead body of her child, when I found that the spirit of the bottle had departed; but I have found thee deceptious and ungrateful; thou didst destroy my reputation, thou didst rob my pocket. You gave me disease instead of health, and made the heart of my wife pulsate with unhappiness. My children wept at the ruin you entailed, and my house you made desolate and sorrowful. Twelve months have I parted from you, and I now renounce thee forever, thou agent of destruction! thou demon of despair!—thou accursed alluring poison!" With that, he hoisted the window, threw the bottle into the street, and declared the victory was won. His wife rushed into his arms, joy beaming in her countenance; she could only utter, my husband! who tenderly embraced her, and sealed her forehead with a kiss. The children ran to their father, climbing on his knees, and their cheerful prattling told how well they partook of the sympathetick joy. Even Nettuno, on the hearth rug raised his head, and gave an encouraging look to his master, and wagged his tail with evident delight. Am. Sentinel.

NATURAL HISTORY.

THE GIGANTICK CRANE.

Of the tribe of waders, there is one which, from its extraordinary size, shape, and appearance, deserves to be particularly noticed. It is called the gigantick crane, (*Ar[illegible]a argila,*) a native of the East Indies, and was the first of birds to meet the eye of Bishop Heber, on his landing in India. "In the morning, as the day broke," says he, "we were much struck by the singular spectacle before us. Besides the usual apparatus of a place of arms, the walks, roofs, and ramparts of the fort, swarmed with gigantick birds, the Hurgila, larger than the largest turkey, and twice as tall as the heron, which, in some respects, they much resemble, except that they have a large blue and red pouch under the lower bill, in which, we were told, they keep such food as they cannot eat at the moment. These birds share with the jackalls, who enter the fort through the drains, the post of scavenger; but unlike them, instead of shunning mankind day and night, they lounge about with perfect fearlessness all day long, and almost jostled us from our paths." The bishop's information, however, respecting this pouch, is not correct; it having been ascertained that this bag is not at all connected with the gullet, and has, therefore, no reference to food, but is merely an air-vessel on a very large scale, employed as occasion requires, either in sustaining the bird in its lofty soaring flights, or assisting it in searching for food in its original dwelling-places, among marshes and lakes. Its natural food in these situations consisting of reptiles and amphibia, it must often find it necessary to go beyond the depth of even its long legs, while from the structure of its limbs it cannot swim, and it is evident that its ponderous awkward beak would prove an additional incumbrance. To overcome these difficulties, the bag, when filled with air, may be of great service, by counteracting the weight of this enormous bill, and thus enabling it to procure food in deep water. And this view of the subject seems to be confirmed by the testimony of an experienced witness, by whom a Hurgila was seen, wading in a large piece of water, and proceeding to a distance from the shore, which was afterward found to be beyond its depth. The conclusion, therefore, was, that by filling this pouch with air, it was enabled to support itself.* That its further use may be to supply it with air in its soaring flights, there are also good grounds for supposing. When the dense vapours of the rainy months are dispersed, and the sun has again burst forth with undiminished fervour on the Indian plains, the Hurgilas are observed to avoid the sultry heat of the lower regions, by taking refuge in the higher, rising gradually till they appear mere specks in the firmament, or entirely lost to the sight. In the hot months, when not a cloud obscures the vault of the heavens, hundreds of these gigantick birds may be seen performing their graceful evolutions, and wheeling majestically at a vast height—enabled to remain in so thin an atmosphere, most probably, by the supply of air collected in this bag.

In its appetite the Hurgila is as great a glutton as our heron. Nothing comes amiss to its all-digesting stomach. A leg of mutton, and a litter of live kittens swallowed whole, proved equally acceptable, with the additional sauce of earth, bones, and hair, picked up between times.

LUMP-FISH.

The lump-fish belongs to the sucker class of fishes: it grows to the length of nineteen inches, and has sometimes been known to weigh seven pounds. The shape of the body is like that of the bream, deep and very thick, and it swims edgeways. The back is sharp and elevated; the belly flat, of a bright crimson colour. Along the body there run

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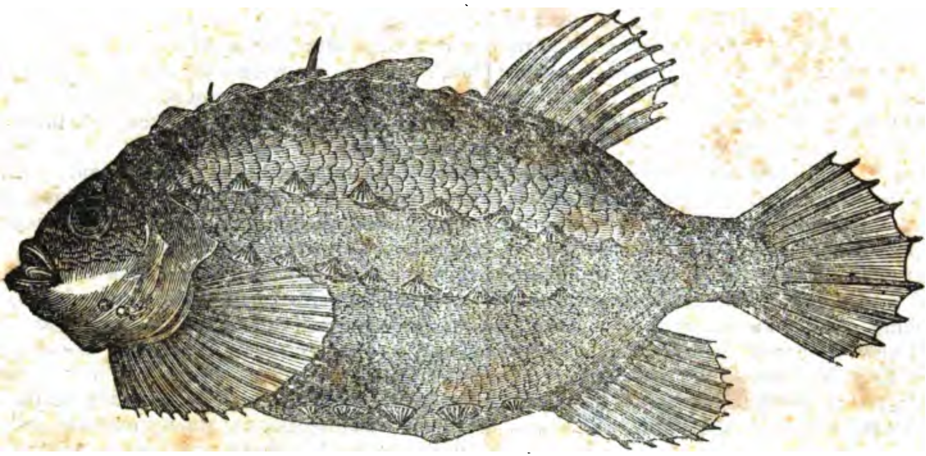
* It appears to be analogous to the pouch of the emeu, and applicable in part to similar purposes.



[Lump-Fish.]

several rows of sharp bony tubercles, and the whole skin is covered with small ones. The pectoral fins are large and broad, almost uniting at their base. Beneath these is the part by which it adheres to the rocks, &c. It consists of an oval aperture, surrounded with a fleshy, muscular, and obtuse soft substance, edged with many small threaded appendages, which concur as so many claspers. The tail and vent-fins are purple. By means of this part it adheres with vast force to any thing it pleases. As a proof of its tenacity, it hath been known, that in flinging a fish of this species just caught into a pail of water, it fixed itself so firmly to the bottom, that on taking the fish by the tail, the whole pail by that means was lifted, though it held some gallons, without once making the fish quit its hold. These fish resort in multitudes during spring to the coast of Sutherland near the Ord of Caithness. The seals which swarm beneath, prey greatly upon them, leaving the skins; numbers of which, thus emptied, float ashore at that season. It is easy to distinguish the place where the seals are devouring this or any other unctuous fish, by a smoothness of the water immediately above the spot. This fact is now established; it being a tried property of oil to still the agitation of the waves and render them smooth. Great numbers of lump-fish are found in the Greenland seas during the months of April and May, when they resort near the shore to spawn. Their roe is remarkably large, which the Greenlanders boil to a pulp and eat. They are extremely fat, which recommends them the more to the natives, who admire all oily food. They call them *nipisets* or *cat-fish*, and take quantities of them during the season. The fish is sometimes eaten, but it is both flabby and insipid.

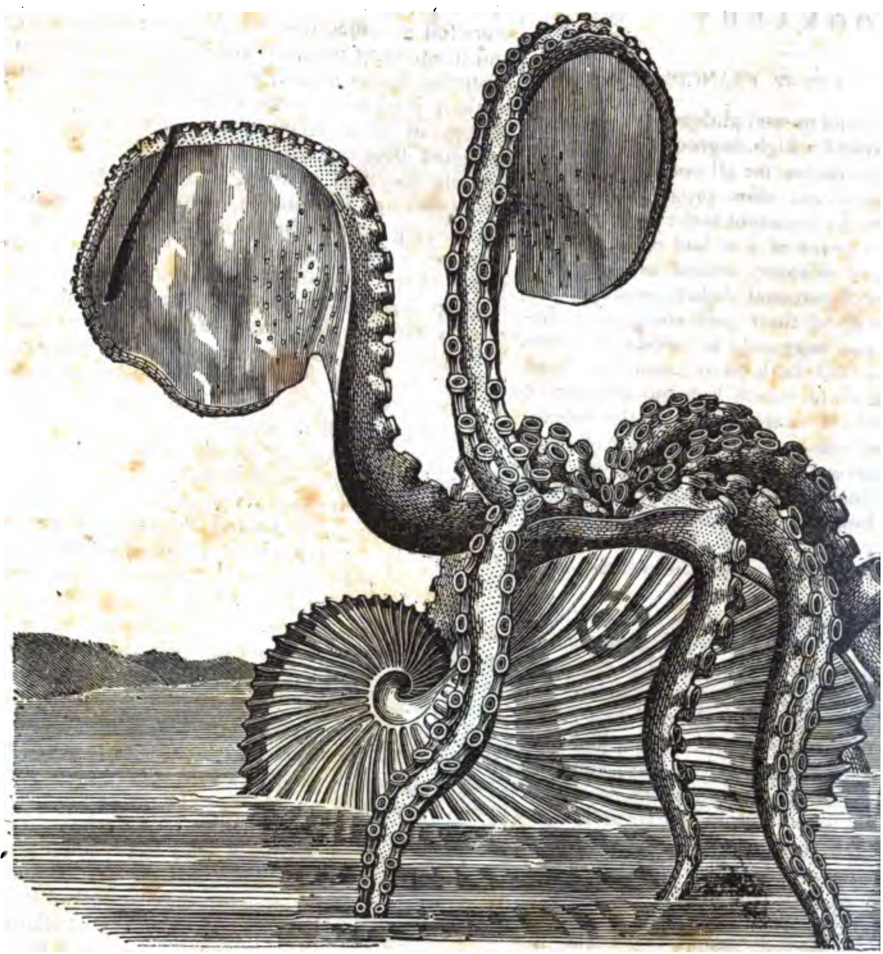
ARGONAUTA.

This interesting and elegant shell is generally well known to collectors by its trivial name of the Paper Nautilus; some authors indeed have suggested the propriety of calling it the *Argo nauta papyracea*, as being more descriptive of its delicate paper-like structure; but as this shell was known and described with considerable accuracy by Aristotle, Pliny, and other early writers on natural history, the present name should be preserved, and with the greater reason, as it was given with a classical allusion to the celebrated expedition of Jason in the ship Argo, to recover the golden fleece; in which all those who accompanied him were called Argonauts, and to whom the art of navigation is poetically described as having been pointed out, in the skilful management exhibited by the instinctive little sailor, inhabiting the Argonauta, while steering its frail bark through ocean's trackless paths.

> "For thus to man the voice of nature spake,
> Go, from the creatures thy instruction take,
> Learn of the little Nautilus to sail,
> Spread the thin oar, and catch the driving gale."—Pope.

In fine calm weather when the bosom of the sea is unruffled, the Argonauta is said to have been observed gently rising with the keel of the shell turned upward, in order, it may be supposed, to present less opposition in its ascent through the water; this may be mechanically effected by the animal ejecting a portion of the water contained in its shell, thereby rendering it specifically more buoyant; but what peculiar organization enables it either to rise to the surface, or sink into the depths of the ocean, cannot yet be satisfactorily explained. When it has reached the surface, it gradually assumes its sailing position, extending three tentacular appendages, which passing over the thickened auriform notch on either side of the shell, serve as so many oars, while in the centre of these, two spoon-shaped membranes are elevated, acting as sails, to catch the passing breeze; and thus this pretty boat is propelled and guided on its way through the azure main. On the approach of any sudden danger, or of tempestuous weather, the little mariner lowers the sails and withdrawing the oars, retires into the hull of its vessel, again sinking to the bottom of the ocean, undismayed by the perils of the deep, a circumstance elegantly alluded to by Byron, when describing the dangerous vicissitudes of a sailor's life.

> "The tender Nautilus, who steers his prow,
> The sea-born sailor of this shell canoe;
> The ocean Mab, the fairy of the sea,
> Seems far less fragile, and alas! more free!



[The Argonauta.]

> He, when the lightning-wing'd tornadoes sweep
> The surf, is safe, his post is in the deep,
> And triumphs o'er the armadas of mankind,
> Which shake the world, yet crumble in the wind."

This interesting little animal has perhaps furnished more matter of dispute, a greater diversity of opinion, and, in some instances, more ill will among naturalists than any other subject in the whole range of animated nature; and during a period of more than two thousand years, the question is not yet decided, nor apparently nearer being so, whether the animal invariably found in the Argonauta is the architect of that shell, or merely a pirate. As it does not however form any part of the object of this work, to take up the dispute on either side; and as we do not arrogate to ourselves the power of elucidating a matter so involved in doubt, we shall only for our part say, that the animal never having been found in any part of the world living *free* from the shell, though certainly not conclusive, is good presumptive evidence of its being "the lawful owner of its fairy bark." Whether it should be considered one of the genus Ocythoë, or, as others imagine, Octopanus, it appears to us quite certain, that none but a similarly organized animal could have constructed such a dwelling; an opinion we deem to some extent confirmed by an examination of the mollusc, whose
smooth thickened auriform proces
of the aperture, appear to serve
for the tentacular members said t
they are therefore wisely so co
vent the laceration that might othe
the constant action of rowing, had
formed thin and cutting as is the c
portion of the aperture.

FROM WASHINGTON'S ORD

August 3, 1776.—"That the tr
opportunity of attending publick w
to take some rest after the great
gone through, the general in fut
from fatigue duty on Sundays, ex
yards, or on special occasions, unt
The general is sorry to be informe
and wicked practice of profane cur
a vice heretofore little known in a
is growing into fashion; he hope
by example as well as influence, e
it, and that both they and the men
we can have but little hope of the
en on our arms, if we insult it b
folly; added to this, it is a vice s
without any temptation, that every
character detests and despises it."

BIOGRAPHY.

PROFESSOR JOHN W. FRANCIS, M. D.

While eloquence and mental philosophy, in almost every form had reached a high degree of perfection, and poets had set examples for all coming ages, the healing art had made but slow progress in those branches of science, so important to the profession of medicine. Correct codes of law had been formed, which had, in a good measure, settled the great doctrines of property and personal rights; some of the arts had nearly attained their perfection, nice discriminations had been suggested in morals, and sublime views of hope and faith in religion had been promulgated to the world, before Vesalius had turned his acute mind to an examination of the human frame; and the settlement of this country had commenced before Harvey had demonstrated the fact, that the blood circulated in the veins of man. From the earliest ages, human blood had been poured out like water in every battle, but no observer of nature had discovered that it had a regular tide through his own heart.

There were, it is true, physicians of antiquity, who performed wonders in the advancement of medical knowledge; but their names appear, in the distances of time, like pyramids in the desert, grand and imposing, but of little utility to the world. Many mighty minds, from Æsculapius to Galen, had been brought to bear upon physick and surgery, and ponderous tomes had been written on every branch of the healing art, but the age of inductive philosophy had not come, and nature had only been partially unveiled. The aphorisms, laid down by Hippocrates and others, had been misunderstood, and their prescriptions misapplied. Whatever rays of medical science there were scattered through the world, they had not been concentrated, and but few efforts made to bring them to a focus, until a little more than a century ago, when the eclectic school of medicine was founded in Scotland, which was followed by others in London, France, and other places; yet, in justice it should be stated, that these philosophers of the "House of Wisdom" had lit their lamps in the medical school at Padua. In this university the Greek and Arabic works on medicine had been studied.

Much earlier than is generally imagined, the accounts of what was doing in the old world were promulgated in the new. Soon after the establishment of these medical schools in Europe, many physicians of this country were desirous of drinking at their fountains. Those, who could not cross the Atlantick themselves, frequently sent their most promising pupils to drink inspiration from the pure waters, which were rolling from these springs If a fortunate few only enjoyed these privileges, the number was sufficient to give a new impulse to the profession in this country. Even before the commencement of the revolution, Rush, Bard, Warren, and Hunter began to collect pupils, and diffuse medical instruction in their respective circles. The political struggle, if it suspended their individual efforts for a while, increased the general knowledge in medicine and surgery throughout the country. After the peace of 1783, they renewed their efforts; the place of General Joseph Warren being supplied by his younger brother, John Warren. Their paths were full of difficulties, but they were men of genius and firmness of purpose, and would not yield to any obstacles thrown in their way. Before these pioneers in their profession were called to depart from the scenes of their labours they saw others, better educated than themselves, filling the chairs of the schools they had founded. This first generation of professors had no ordinary share of fame, when they were living; and their pupils, who now wear their mantles, have, in gratitude and affection, taken no small share of pains to preserve materials for the biographies of their masters. These materials have greatly assisted the Nestor of their profession—the venerable Dr. Thacher—in making up his valuable volume of the lives of the medical men of America who have been lights in their day, and deserve an ample page in our records.

No man of historical information will, for a moment, question the assertion, that there is as good a share of learning, acuteness, and perseverance, in the medical profession in the United States, as in any other walk of life. A noble rivalry has taken place among the medical professors, and youthful aspirants for distinction are every where found. This emulation not only abounds in the cities, and large towns, but there is not a village throughout the land, that does not contain a respectable practitioner of medicine, and often, in the same person a good surgeon. Where quacks and charlatans once swarmed—"creatures," to use the language of Hippocrates, "whom no law can reach and no ignominy disgrace"—respectable physicians now administer to assuage the pains that flesh is heir to, and cure the maladies of the mind.

Prominent among those who have laboured hard for the benefit of mankind, and for the honour and advantage of the healing art, may be ranked **Professor John W. Francis, M. D.**, a practitioner of medicine in the city of New York—his birth place. He was born in the year 1789—that eventful period of our national history, when the constitution of the United States went into operation. His father, Melchior Francis, was a German from Nuremberg, and known in New York as an enterprising, upright trader in groceries, possessing a very liberal and charitable spirit, whose career of usefulness was suddenly cut short by the yellow fever, which, in those days, often visited the city. The mother of Dr. Francis was born in Pennsylvania; her family, by the name of Sommer, were originally from Berne, Switzerland. Her children were young when her husband died; but she was left in circumstances sufficiently easy to give them a good elementary education, which opportunity, as a good mother, she improved. John was continued at an English school of no little reputation, under the charge of the Rev. George Strebeck; but by particular arrangement he studied the Latin language then, for a while; and afterward pursued his classical studies under the charge of the Rev. John Conroy, a distinguished graduate of Trinity college, Dublin. By the aid of this excellent scholar he was enabled to enter Columbia college in an advanced standing. He was graduated in 1809, and in 1812 received the degree of master of arts.

While Dr. Francis was an undergraduate, he was pursuing his medical studies with great zeal and success; this was effected by a capacity, an ardour and perseverance, which have marked his whole course of life. He had not only mental energy, but a vigorous constitution, which sustained him in intense application in the acquisition of knowledge.

In 1807 he commenced his professional studies with the late David Hosack, M. D. who was then professor of materia medica and botany, in Columbia college, and among those most extensively engaged in the practice of physick and surgery in New York. Under this distinguished preceptor, Dr. Francis had excellent opportunities of seeing practice. During his attendance on the lectures for four collegiate years he never absented himself from one of them, nor suffered one to pass without making notes or abstracts on the subject taught by the lecturer. His clinical knowledge was also much increased by a constant attendance at the New York Hospital; in fact every moment of his time was engaged; he never looked to society around him for amusement or recreation—finding both in the variety of the subjects under his consideration.

About this period, several laws for the greater improvement of medical science were enacted by the legislature of the state of New York. County medical societies had been formed the year before, and promised to be auxiliary in promoting the cause of medical science. "The College of Physicians and Surgeons," under the regents of the university, was organized in 1807. From this institution, in 1811, Dr. Francis received the degree of M. D. This was the first commencement of that body, under the presidency of Dr. Samuel Bard, and the subject of this memoir was the first graduate who recorded his name in the "College Album." Dr. F.'s inaugural thesis for the doctorate was a dissertation on *Mercury*, embracing its medical history, curative action, and abuse in certain diseases. It was a fine subject, and admirably handled. His researches were extensive, while many of his views were novel and profound; and they have since been confirmed in a manner highly flattering to Dr. Francis, by the philosophical inquiries of British and continental practitioners. The hundred-armed giant, Mercury, in the materia medica, had never been found so discriminating an historian. This production gave him great fame at once, among his fellow graduates and the faculty in general, both in this country and in Europe. It has been repeatedly noticed by different writers in various languages, and maintains its reputation at the present time.

Dr. Francis had been in practice a few months only, when his late preceptor proposed to him a copartnership in business. This proposition, from the high standing of his friend, was too flattering to be neglected. This connexion lasted until 1820; since that time Dr. F. has exercised his art on his own responsibility. No man ever reached the head of his profession until he had ventured to act solely for himself. The mind, to attain its utmost energy, must poise itself on its own strength and decision, and take all the consequences of action.

We have mentioned the establishment of the College of Physicians and Surgeons, in the city of New York, under the regents of the university. From the organization of the institution, the chairs of every department were filled with men of distinction. Alterations were soon after made in the charter, and Dr. Francis was appointed, by the trustees, a lecturer on the institutes of medicine and the materia medica. Shortly after this period, a uni
effected between the medical faculty of C
college and the "College of Physicians a
geons," and Dr. Francis, in 1813, received f
regents the appointment of professor of
medica. He delivered his first publick cours
struction to a class of one hundred and
students, declining all compensation for his s
the consolidation of two schools of medicine i
brought together so numerous a body of pro
that the price of education was necessarily en
to those who wished to attend all the course
struction; but Dr. Francis was not among th
sought for pecuniary rewards alone; the f
manner in which his conduct was estimat
such a return as he desired for his exertions.
this time he published an Historical Sketch
college. The students of the new school
chartered establishment, had formed themsel
a medical society, like that of Edinburgh, to i
themselves by weekly discussions on medic
jects; the president of this society, whi
denominated the Medico-Chirurgical Socie
selected from the professors of the college,
many years Dr. Francis was chosen to preside
succeeding in this appointment, the learned Dr.
ill. Delighted at the prospect of this rising
and fairly estimating the intellect of those eng
in building it up; impressed, at the same tim
the ample resources that the city of New Yo
sesses of supporting such an institution, Dr.
made up his mind to visit Europe, and to exa
that related to the subject so near his heart.
vision of a medical school, second to none
American continent, that should, from its su
advantages, draw together students from a
of the country, was constantly on his mind.

While in London, he became a pupil of th
trious Abernethy, and witnessed the practice
Bartholomew's hospital, attended the lectu
Brand, at the Royal Institution, those of P
of St. George's hospital, etc. etc. Between A
thy and Francis there sprung up a strong attac
They possessed the same cast of mind, th
decision of character, the same openness and
ness in uttering opinions, and the same sc
dawdling ceremony and grave pretensions
healing art. Such was Abernethy's regard fo
cis, that he offered him a share of his business,
was then oppressively extensive.

The mention of an anecdote, which the An
physician has often related, will show that th
Englishman loved honest fame. Dr. Franc
sented Abernethy with an American edition
own writings, just published as the former
native shores. Abernethy had not anticipat
a testimonial of his professional merits fr
United States, He seized the two volumes,
eye over them, and exclaimed, as he placed t
the mantle-piece of his study, "Stay here
Abernethy, until I remove you. Egad! thi
America!"

From England, Dr. Francis went to Sc
Ireland, France, and Holland. With an eag
osity, he examined all that was rare and pro
in these countries. His letters gave him ac
all the savans and literati, wherever he travelle
Scotland he shared the liberality of the great

sors, in their schools, which had been proverbially extended to all who come to drink of the wells of knowledge, which they have, by their sagacity and industry sunk, to produce healing waters for the benefit of mankind. Here, too, he listened to the eloquent and classical lectures on practical medicine by Dr. James Gregory, and witnessed the early experiments of the philosophick Brewster, in his private study, on the polarization of light. In Dublin, he was received with true Irish cordiality, and found in the anatomical preparations of McCartney, specimens which rival even those of Hunter. In France, he found the sweetest courtesy. With Denon, he viewed, in his cabinet, and in those institutions under his care, all that was magnificent in the arts. With such a guide, he could not mistake what was worthy of examination. Gall displayed to him the rich materials of his collections, on which he founded his system of craniology; while the "Jardin des Plantes" under the direction of M. Thouin gave him new new ardour for a knowledge of the wonders of creation. With Cuvier he noticed that which was more intimately connected with his own profession. Such a mind as Cuvier's, so full, so holy, so abounding in love to God and man, must have imparted a magnetick influence to the minds of others. Dr. Francis is warm in his admiration of those lights of knowledge he every where met in his travels. He went forth to learn, to gather up matters worth preserving; and a mind so disciplined to receive information, treasures it with wonderful facility. The amount of a year's labour is almost incalculable. The mind, on such an adventure, plucks gems "of purest ray serene," with all the avidity of Aladdin in the wizard's cavern, after securing the lamp of the genii in his bosom.

Dr. Francis was enamoured with the learned men he met in different countries; but his political affections were wedded to his own, and in the midst of his admiration of European learning, he was still a republican.

Upon his return, he brought out with him a curious and valuable library, collected with taste and judgment, which has ever since been open to those who are engaged in writing any thing to enlighten the publick, and in proof of the esteem in which he is held by the scholars and literary men of this country, we will merely mention the fact, that no less than thirty works upon the various departments of science and polite literature have been inscribed to him. When he reached New York, he found that the chair of materia medica had been added to that of chymistry; but he was at once appointed by the regents to that of the institutes of medicine. In the year 1817, Dr. Francis in connexion with his other duties, filled the chair of medical jurisprudence, which had become vacant by the death of Dr. Stringham. In 1819, by reason of the resignation of a professor, another change became necessary; the professorship of the institutes was added to that of the practice of medicine, and the regents appointed Dr. Francis professor of obstetrics, with his former branch, medical jurisprudence. These chairs he held until 1826, when he resigned, at the same time with Doctors Hosack, Mott, Macneven, and Mitchill; Dr. Post, had given up the professorship of anatomy and also the presidency of the college, a short time previous. The causes, which led to the course pursued by the professors of the medical school, are not minutely within the writer's knowledge; but, whatever they may have been, the friends of medical science must have deplored the event. The regents, while they accepted the resignation of that old established faculty, bear testimony to their able and faithful services, in the discharge of their duties; and in their extensive report on the institution drawn up after the fullest personal inquiries and published in the legislative journals of the state, triumphantly acquit them of every charge which ignorance, envy or malice had preferred against them.

It must be evident that the faithful discharge of duties in teachers, when the respective departments were so repeatedly changed, must have required the exercise of much labour and trouble. The professor had hardly engaged in one branch, with means to teach, before he was transferred to another. Nothing daunted with his task, while remembering the maxim of the Grecian philosopher—"the gods sell all things to industry"—he put off or put on the harness of his chair, without any complaint, and in every department proved his merits by the number of his pupils, and by the satisfaction and gratification they constantly expressed in regard to their teacher. The school, with these professors, was second to none in merit in the United States; more than two hundred and fifty students now attended it and it was inferior in numbers only to that of Philadelphia, notwithstanding that the singularly formed constitution of the college was, from its foundation, unfriendly to its proper developement and advancement. The celebrity of the professors was such as to command students from every part of the Union; and these wherever scattered, have borne testimony to the talents, intelligence and zeal of their instructers.

Soon after the resignation of the professors of the College of Physicians and Surgeons, a majority of them founded and organized chairs in Rutgers' college. In the place of Professor Post, the chair of anatomy and physiology was filled by the late distinguished Dr. Godman, who at the instance and on the responsibility of Professor Francis, left Philadelphia for a larger sphere of usefulness and profit. They erected a most convenient building for their purposes, and entered on their respective duties with spirit, and continued their exertions for four terms. A great number of pupils flocked to their school; but there were such difficulties thrown in their way by legislative enactments, particularly by the revised statutes of the state, that although sustained by nearly one hundred and fifty pupils, the faculty gave up their school. Dr. Francis partook largely both in the labour and losses of this undertaking, and the latter were of no small amount. Every friend and patron of sound practical medicine now admits that the interests of medical learning received a severe shock by the abandonment of this school; nor have its enemies derived the advantage they expected from its destruction.

In this institution Dr. Francis was professor of obstetrics and legal medicine; and his success was very flattering. In amount of pupils, his classes in both colleges were second only to those of anatomy, which always commands the greatest number of pupils in every well-arranged medical school. The close relationship which exists between many parts of the physiological portion of a course of instruction on midwifery, with numerous topicks discussed in forensick medicine, enabled the professor to enlarge, with practical advantage to his auditors. The professor had a rich museum, to illustrate his various and learned disquisitions. In Dr. Francis's third edition of Denman's midwifery, a large amount of facts and opinions on the obstetrick art and medical jurisprudence, may be found. His history of the art, from the time of the ancients to that of the latest writers on the subject, has received the approbation of the most erudite and practical. He had devoted from four to six hours a day to private and publick instruction, for many years, and at the same time had been engaged in the labours of practice. The number of students under his care, while he was connected with the institutions above-named was, probably, greater than that of any other professor in New York. He now made up his mind to confine himself to practice alone, refusing to engage in private or publick instruction.

Even an extensive practice and the duties of instruction did not absorb all the time he devoted to labour; for his pen had a share of his attention. Before he received his medical doctorate, while a student, he united with his preceptor, Dr. Hosack, and issued a prospectus for a new medical journal; it was called the "American Medical and Philosophical Register." The work was continued to four volumes. It was filled almost entirely with original materials; and contains a large amount of information on medical subjects. After the completion of the fourth volume, the editors assumed the responsibility of the work, and announced their names. This journal has been held in high consideration, and is often referred to for matters of deep interest or curious inquiry.

Dr. Francis, in conjunction with the late Dr. Dyckman and Dr. Beck, was for some time editor of the New York Medical and Physical Journal, which they projected; he continued as one of the editors until the termination of the third volume. This work contains a number of his medical observations and records: it has ceased to exist.

Dr. Francis has written papers in many different medical and scientifick journals in the United States, on subjects connected with his profession; among the most prominent of these, and of a practical nature, are his observations on the use of vitriolick emeticks in croup, with details of cases, in which this novel remedy was effective, after the formation of the adventitious membrane lining the trachea; also, remarks on the goitre, as it prevails in the western part of New York, and elsewhere; drawn from his tour of observation in 1823; on sanguinaria Canadensis; cases of morbid anatomy referred to in Otto's "*Hanbuch der pathologischen anatomie;* facts and inferences in medical jurisprudence; on phlegmasia dolens; on elaterium, and the croton oil; to which potent agents he was the first, in this country, who invited the attention of practitioners. He gained great credit for a paper on the successful treatment of cases of ichthyosis. The last tract which we have seen from his pen, is one on the mineral waters of Avon in Livingston county, New York, which he recommends as possessing valuable medicinal properties for several physical infirmities; his views of which have been confirmed by the testimony of hundreds who have found health in the waters. His letter on febrile contagio
London, June, 1816, addressed to Dr. H
tains an exposition of the views of cer
writers on the insusceptibility of the cor
a second attack of yellow fever. This
concerning the disease, which was prett
monstrated by various writers of Great
the West Indies, received additional c
from Dr. Francis, from the investigation
letter brought to light, by American phys
had observed the pestilence in different
United States. Other sources might be
as proving the great value of Dr. Franci
opinions on the nature and treatment
diseases. His reflections on the peculia
of scarlet fever with his admirable and l
cessful mode of treating this formidable
disorder, with many observations on othe
may be seen in the new and greatly impro
of "Good's Study of Medicine" edited
Sidney Doane of New York, a book whi
better view of the opinions of American
on disease, than is to be found in any oth

Dr. Francis was not only distinguish
chair of medical jurisprudence for collecti
of facts, and arranging them in a clear an
tory manner, and for explaining them to th
hension of his humblest pupils, but for th
ness of his expositions when called upo
of criminal jurisdiction. During his wh
sorship, and almost ever since, in every c
involved a principle of medical jurispru
has been present; his opinions have sel
controverted, and never overthrown. H
attendance for the municipal authorities,
courts; but his integrity was above all bi
was seldom that the advocate of the acc
moned any other medical man.

In the opinion of the writer of this a
branch of science taught in our schools
more careful investigation, or greater acut
strength of mind, than that of medical juris
Comparative views and analogical reaso
often important in decisions of less resp
are of little service in juridical medicine.
ate these difficulties, Dr Francis invariab
himself of the information which the morbic
and pathological investigation of the case

There is not a middle aged lawyer in th
whose memory does not furnish him with
gross injustice done in criminal trials, by
defective medical jurisprudence. A sagaci
cate, thinking that he is justified, in favour
life, to entangle the physician, if he can,
his strength to the object, and not unfrequ
ceeds in throwing him into a state of confu
cases of supposed death by poison, the mo
dictory opinions have been given by med
on the stand. The doings of death are, in
gular; and it is difficult for the wisest phy
all times, to decide upon the causes of a su
unexpected instance of the extinction of hu
and how can a common observer among t
tell whether it was accident, violence, or t
winding up of the machine so fearfully anc
fully made, or from suicidal frenzy, that "
cord of life was loosed, or the golden bowl
the pitcher broken at the fountain."

probably referring to some native instrument, in the construction of which iron might be advantageously substituted for stone or bone. When beads were shown to them, they inquired "whether they should eat them." When their use was explained, they were given back as of no value, and a looking-glass was regarded with equal indifference. Plates of earthenware and china cups were so new to their eyes, that they asked if they were made of wood.

About three o'clock the vessels succeeded in anchoring, and Cook rowed to the land with three armed boats and a party of marines. "The very instant," he says "I leaped on shore, the collected body of the natives all fell flat upon their faces, and remained in that very humble posture till by expressive signs I prevailed upon them to rise. They then brought a great many small pigs, which they presented to me, with plantain-trees, using much the same ceremonies that we had seen practised on such occasions at the Society and other islands; and a long prayer being spoken by a single person, in which others of the assembly sometimes joined. I expressed my acceptance of their proffered friendship, by giving them in return such presents as I had brought with me from the ship for that purpose." The same deferential obeisance was afterward paid to him during an excursion which he made through the country; and he believed it to be the mode in which the natives manifested respect to their own chiefs. The people assisted his men in rolling casks to and from the watering-place, readily performed whatever was required of them, and merited the commendations of their visiters by fair dealing; there having been no attempt to cheat or to steal after the first interview.

On the morning of the twenty-third a breeze sprung up at northeast, when, to avoid being driven on shore, it became necessary to stand out to procure searoom; and the adverse winds and currents having drifted the vessels far from the harbour, after several unsuccessful attempts to regain it, they anchored off the neighbouring island of Oneeheow or Ni-Hau. Here the captain deposited some goats, pigs of the English breed, and various useful seeds, which he had intended for Atooi. The provisions obtained at these islands were reckoned sufficient for nearly four weeks' consumption; and, having thus recruited his stores, on the second of February he made sail with a gentle breeze to the northward. "Of what number," he says, "this newly discovered archipelago consists, must be left for future investigation." Besides those visited, three others were seen, Woahoo or Oahu, Oreehoua, Tahoora or Taura. This group, lying between the latitude of 21° 30′, and 22° 15′ N., and 199° 20′, and 201° 30′ east longitude, received, in honour of the first lord of the Admiralty, the name of the Sandwich islands.

On the seventh the wind, having veered to southeast, enabled the vogagers to steer northeast and east till the twelfth, when another change induced them to stand to the northward. About a fortnight after, when proceeding more towards the east, they met with rockweed or sea-leek, and now and then a piece of wood floated past. During the whole of this course, scarely a bird or living creature was seen; but on the sixth of March two large fowls settled near the ships. The next day two seals and several whales were observed; and the dawn of the seventh revealed the anxiously expected coast of New Albion, in latitude 44° 33′ N., longitude 235° 20′ E. It was richly wooded, of moderate height, and diversified with hills and valleys. To its northern extremity Cook gave the name of Cape Foulweather, from the gales which he experienced in its vicinity, and which obliged him to tack off and on several days. At length, after various hazards, a large opening was observed on the twenty-ninth, in latitude 49° 15′ N., longitude 233° 20′ E., and from its promising appearance received the title of Hope bay. Into this inlet he sailed four miles, when the night closing in, he came to anchor in deep water, within a hawser's length of the shore.

It was certain that the country was inhabited; a village was observed on the western side of the sound; and three canoes shaped like Norway yawls came off. When they drew near, a native rose and made a long oration, apparently inviting the strangers to land, and at the same time he continued strewing feathers towards them, while some of his companions scattered handfuls of red powder. The speaker, who was dressed in the skin of an animal, held in each hand a kind of rattle; and when he sat down, another began to declaim in his turn, in a language wholly unintelligible to their visiters. They then quietly conversed among themselves, betraying neither distrust nor surprise; some of them occasionally stood up and made harangues; and one sang a very pleasant air, with a softness quite unexpected.

The next day the vessels were removed to a safer anchorage, amid a great concourse of the inhabitants. Their disposition was quiet and friendly, and they willingly supplied the voyagers with such provisions as they possessed, though their refusal to accept any thing but metal in exchange gave rise to some perplexity. They preferred brass to iron; and we are told that, to gratify their demands, "whole suits of clothes were stripped of every button, bureaux of their furniture, and copper kettles, tin canisters, candlesticks, and the like, all went to wreck." The name of the sound was Nootka; and the natives are described as being under the common size, with full round visages and small black eyes. In many individuals the ears were perforated in two or three places, for the purpose of suspending bits of bone, quills fixed on a thong of leather, shells, bunches of woollen tassels, or pieces of thin copper. Ornaments of iron, brass, or copper, shaped like a horse's shoe, were frequently introduced into the septum of the nose, from which they dangled over the upper lip. The sexes so nearly resembled each other in dress and stature, that it was difficult to distinguish them; the females, it is said, "possess no natural delicacies sufficient to render their persons agreeable." Nearly a month was passed in uninterrupted friendship among these savages; and when the ships weighed anchor, they followed the strangers to the mouth of the sound, importuning them to repeat their visit, and promising an ample supply of skins.

The voyagers reached the open sea on the twenty-sixth of April; but scarcely had they cleared the land, when a storm coming on, accompanied with such darkness that they could not see beyond the ship's length, they were obliged to stand out from the shore with all the sail which the vessels could

[Man of Nootka Sound.]

[Woman of Nootka Sound.]

carry. They did not regain the coast till the first of May, in the parallel of 55° 20′; on the fourth they saw Mount St. Elias, in latitude 58° 52′, and nine days after came to anchor in an inlet two degrees towards the north, on which they bestowed the name of Prince William's sound. The natives were strong chested, with thick stout necks, and heads disproportionately large; their hair was black and straight; and their beards, which were generally thin, were in many altogether wanting. "A mark," says Admiral Burney, "which distinguished these people from every other known, was their under lips being perforated or slit through in a line parallel to the mouth, and about three quarters of an inch lower, through which they wore pieces of carved bone; and sometimes, which had a hideous effect, they would remove the bone-ornament, and thrust as much as they could of their tongue through the opening." This incision, indeed, was not universally adopted, and the sailor who first not
called out that the man had two mouths. Th
however, were generally pierced, and bunc
beads suspended from them; while the no
ornamented by thrusting through the septum
of three or four inches in length. They wo
truncated caps of straw or wood, like those o
at Nootka. The females allowed their hair
long, and the majority tied a small lock of it
crown. In some the lower lip was bored in
places, to admit the introduction of strings o
or beads of such length as occasionally to h
low the point of the chin.

The commander sailed hence on the tw
and pursued his course along the coast, wh
trended to the southward. On the twenty-
reached an opening to the north, into w
steered the ships in the expectation of fin
desired termination of the American conti

[Man of Prince William's Sound.]

[Woman of Prince William's Sound

was, however, soon discovered to be only an inlet or an arm of the sea leading to the mouths of two rapid streams: no name was bestowed on it at the time, but the Earl of Sandwich afterward directed that it should be called Cook's river. Eleven days were spent in its examination, and the vessels did not clear its entrance before the sixth of June. They now sailed southwestward along the great promontory of Alaska, passing several islands in their course, till the nineteenth, when some natives came off and delivered a wooden box, containing a note written in Russian characters. Unfortunately these were unintelligible to the voyagers, but they deciphered the dates 1776 and 1778; and the captain was of opinion that it was a paper left by Russian traders to be delivered to any of their countrymen who should next visit these regions. On the twenty-sixth the vessels reached a large island, which was found to be one of the Aleoutian or Fox Archipelago, called Nowan Alsacha or Oonalaska; and two days after they came to an anchor in the small bay of Samgonoodha, on its southeastern shore.

On the second of July they again made sail, and, doubling Cape Oonamak, coasted the northern side of the peninsula till they arrived at a large bay, which received the name of Bristol, while its north point was called Cape Newenham."

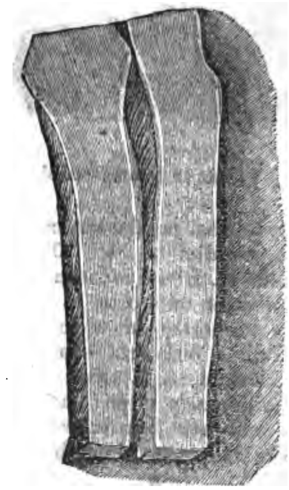
THE HUMAN BODY—No. III.

[A portion of the stomach, showing its internal surface or mucous coat.]

Unlike all the other tissues of this class, the mucous membranes are the immediate seat of some of the most important functions of the economy; in the lung, of respiration; in the stomach, of digestion; in one part of the intestine, of chylification; in another, of excretion; while in the mouth and nose, they are the seat of the animal functions of taste and smell; and they are highly organized in accordance with the importance of the functions they perform.

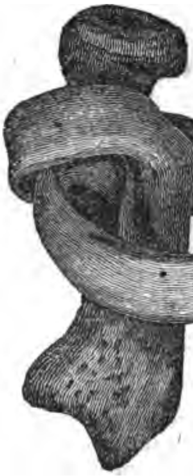
The last form of membrane which it is necessary to our present purpose to particularize, is that which constitutes the external covering of the body, and which is called the *skin*. The skin is every where directly continuous with the mucous membranes that line the internal passages, and its structure is perfectly analogous. Both the external and the internal surface of the body may be said therefore to be covered by a continuous membrane, possessing essentially the same organization, and almost identically the same chymical composition. The skin is an organ which performs exceedingly varied and important functions in the economy, to the understanding of which it is necessary to have a clear conception of its structure; some farther account of it will therefore be required; but this will be more advantageously given when the offices it serves are explained.

Such is the structure, and such are the properties, of the first distinct form of organized matter. The second primary tissue, termed the CARTILAGINOUS is a substance intermediate between membrane and bone. The nature of its organization is not clearly ascertained. By some anatomists, it is regarded as a uniform and homogeneous substance, like firm jelly, without fibres, plates, or cells; others state that they have been able to detect in it longitudinal fibres, interlaced by other fibres in an oblique and transverse direction, but without determinate order. All are agreed that it is without visible vessels or nerves: not that it is supposed to be destitute of them, but that they are so minute as to elude observation. Its manifest properties are wholly mechanical. It is dense, strong, inextensible, flexible, and highly elastick. It is chiefly by its property of elasticity that it accomplishes the various purposes it serves in the economy. It is placed at the extremities of bones, especially about the joints, where, by its smooth surface, it facilitates motion, and, by its yielding nature, prevents the shock or jar which would be produced were the same kind and degree of motion effected by a rigid and inflexible substance. Where a certain degree of strength with a considerable degree of flexibility is required, it supplies the place of bone, as in the spinal column, the ribs and the larynx.

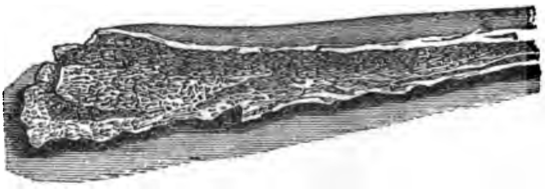


[Portions of cartilage, seen in section.]

The third distinct form of organized matter is termed the OSSEOUS tissue. Bone is composed of two distinct substances, an animal and an earthy matter: the former organick, the latter inorganick. The animal or organick matter is analogous both in its nature and in its arrangement to cellular tissue the earthy or inorganick matter consists of phosphorick acid combined with lime, forming phosphate of lime. The cellular tissue is aggregated into plates or laminæ, which are placed one upon another, leaving between them interspaces or cells, in which is deposited the earthy matter (phosphate of lime.) If a bone, for example, the bone called the radius, one of the bones of the fore-arm, be immersed in diluted sulphurick, nitrick, muriatick, or acetick acid, it retains its original bulk and shape; it loses, however, a considerable portion of its weight, while it becomes so soft and pliable, that it may be tied in a knot. In this case, its earthy matter is removed by the agency of the acid, and is held in solution in the fluid; what remains is membranous matter (cellular tissue.) If the same bone be placed in a charcoal fire, and the heat be gradually raised to whiteness, it appears on cooling as white as chalk; it is extremely brittle; it has lost much of its weight, yet its bulk and shape continue but little changed. In this case, the membranous matter is wholly consumed by the fire, while the earth is left unchanged. Every constituent atom of bone consists, then, essentially of animal and earthy matter intimately combined. A little more than one third part consists of animal matter, (albumen,) the remaining two thirds consist of earthy matter, (phosphate of lime,) other saline substances, as the fluate of lime and the phosphate of magnesia, are also found in minute quantity, but they are not peculiar to bone.



[Membranous portion of bone; the earthy portion being so completely removed, that it is capable of being tied in a knot.]



[Earthy portion of bone.]

In general, the osseous tissue is placed in the interiour of the body. Even when bone approaches the surface, it is always covered by soft parts. It
is supplied with but few blood-vessels,
fewer nerves, with no absorbents large en
visible, so that though it be truly alive, y
properties are not greatly developed. T
ment of its component particles is highl
the structure, the disposition, and the co
individual bones afford striking examples
ism, and accomplish most important u
economy; but those uses are dependent
mechanical than vital properties. The
of bone are—1. By its hardness and
afford a support to the soft parts, forming
which the more delicate and flexible org
tached and kept in their relative positio
defend the soft and tender organs by form
in which they are lodged and protect
formed by the bones of the cranium for th
and protection of the brain; by the bo
spinal column for the lodgment and prote
spinal cord; by the bones of the thor
lodgment and protection of the lungs, the
the great vessels connected with it. 3.
ing fixed points for the action of the m
by assisting in the formation of joints
muscles in accomplishing the function of l

All the primary tissues which have
considered consist of precisely the same
principles. Albumen is the basis of then
the albumen is always mixed more or le
together with a minute quantity of saline
to the osseous tissue is superadded a lar
tion of earthy matter. With the excep
mucous, the organization of all these tiss
ple; their vital properties are low in k
degree; their decided properties are ph
the uses they serve in the economy
wholly mechanical.

THE WINDS.

BY MISS H. F. GOULD.

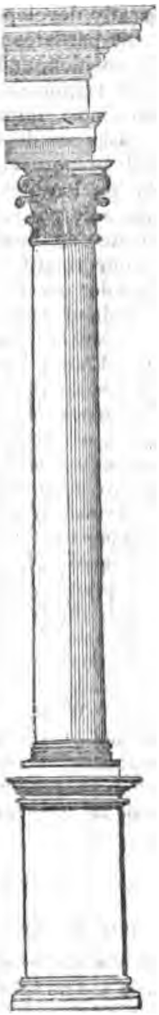
We come, we come, and we feel our might,
As we are hastening on in our boundless flig
And over the mountain, and over the deep,
Our broad, invisible pinions sweep.
Like the spirit of Liberty, wild and free!
And ye look on our works, and own 'tis we
Ye call us the Winds, but can ye tell
Whither we go, or where we dwell?

Ye mark, as we vary our forms of power,
And fell the forest, or fan the flower,
When the hare-bell moves and the rush is b
When the tower's o'erthrown, and the oak i
As we waft the bark o'er the slumbering wa
Or hurry its crew to a watery grave;
And ye say it is well, but can ye trace
The wandering Winds to their secret place?

And whether our breath be loud and high,
Or come in a soft and balmy sigh,
Our threatnings fill the soul with fear,
Or our gentle whisperings woo the ear
With musick aerial, still 'tis we;
And ye list, and ye look, but what do you s
Can you hush one sound of our voice to pea
Or waken one note when our numbers ceas

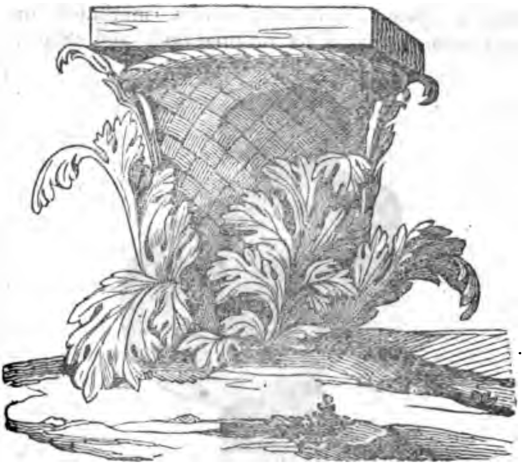
Our dwelling is in the Almighty's hand,
We come and go at his command,
Though joy or sorrow is in our track,
His will is our guide, and we look not back
And if in our wrath ye would turn away,
Or win us in gentlest airs to play,
Then lift up your hearts to HIM who bind
Or frees at his will the obedient Winds.

ARCHITECTURE.

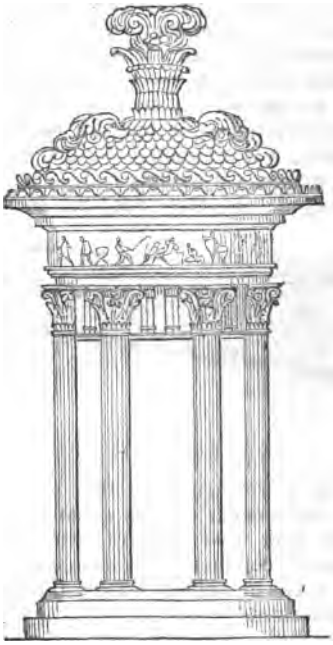


[Corinthian Order.]

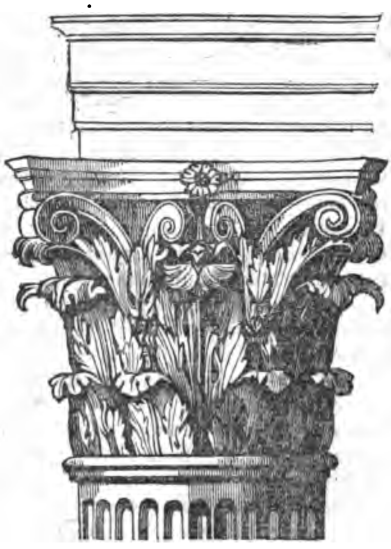
The Corinthian Order.—The story of the origin of this order, given by Vitruvius, is as follows:—"The third species of columns, which is called Corinthian, resembles in its character the graceful, elegant appearance of a virgin, whose limbs are of a more delicate form, and whose ornaments should be unobtrusive. The invention of the capital of this order arose from the following circumstance. A Corinthian virgin, who was of marriageable age, fell a victim to a violent disorder: after her interment, her nurse collecting in a basket those articles to which she had shown a partiality when alive, carried them to her tomb, and placed a tile on the basket for the longer preservation of its contents. The basket was accidentally placed on the root of an acanthus plant, which, pressed by the weight, shot forth towards spring in stems of large foliage, and in the course of its growth reached the angles of the tile, and thus formed volutes at the extremities. Callimachus, who for his great ingenuity and taste in sculpture was called by the Athenians κατατεχνος, happening to pass by the tomb, observed the basket, and the delicacy of the foliage which surrounded it. Pleased with the form and novelty of the combination, he took the hint for inventing these columns, and used them in the country about Corinth, regulating by this model the manner and proportion of the Corinthian order. A beautiful illustration of this story will be seen in the cut.



It has been before observed in our notice of Egyptian architecture, that the capitals to be found in that country are much more likely to have given the hint for the Corinthian than the circumstance here mentioned. The only pure example of this order in Greece is the monument of Lysicrates, of which a view is given below.



The capital of this specimen is exquisitely beautiful, but the same praise cannot be awarded to the entablature: the architrave is too large, and the frieze extremely small; the bead-mouldings of the cornice (which completely overpower the corona) consist of large dentils, supported by the echinus, and surmounted by a cyma recta under a cyma reversa, which supports the corona. The base is extremely beautiful, resembling that of the temple of Minerva Polias, except that an inverted echinus is substituted for the upper torus: the base stands upon a large inverted cavetto, connected with the continued plinth by another inverted echinus. The flutes terminate upward in the form of leaves, instead of being divided from the capital as usual by an astragal. The building is circular, and its centre is the summit of an equilateral triangle, of which the base is a line bounded by the centres of any two of the columns: the intercolumniation is six modules, thirteen minutes and one-fifth. Height of the column, twenty modules, thirteen minutes and two-fifths, of which the base occupies twenty-one minutes; and the capital, two modules, twenty-seven minutes. The architrave, fifty-three minutes and two-fifths; the frieze, forty-one minutes and two-fifths; and the cornice forty-eight minutes and four-fifths. The finest Roman example of this order is that of three columns in the Campo Vaccino at Rome, which are commonly considered as the remains of the temple of Jupiter Stator. This example has received the commendation of all modern artists, yet has seldom been executed in its original form. This is probably owing to the excessive richness and delicacy of it, which renders its adoption very expensive, and perhaps the modification of it by Vignola is preferable to the original, possessing a sufficient enrichment without the excessive refinement of the other.



In this order (which has been adopted by Sir William Chambers) the base is one module in height; the shaft, sixteen modules, twenty minutes; and the capital, two modules ten minutes; thus giving ten diameters to the whole column. The architrave and frieze are each one module, fifteen minutes in height, and the cornice, two modules. The cornice is distinguished by modillions interposing between the bead-mouldings and corona; the latter is formed by a square member surmounted by a cymatum supported by a small ogee: the former is composed by dentils, supported by a cyma reversa, and covered by the ovola. When the order is enriched, which is usually the case, these mouldings, excepting the cymatium and square of the corona, are all sculptured: the column is also fluted, and the channels are sometimes filled to about a third of their height with cablings, which are cylindrical pieces let into the channels. When the column is large, and near the eye, these are recommended as strengthening them, and rendering the fillets less liable to fracture; but when they are not approached, it is better to leave the flutes plain. They are sometimes sculptured, but this should highly enriched orders. An example i *fig.* 1.

fig. 1.

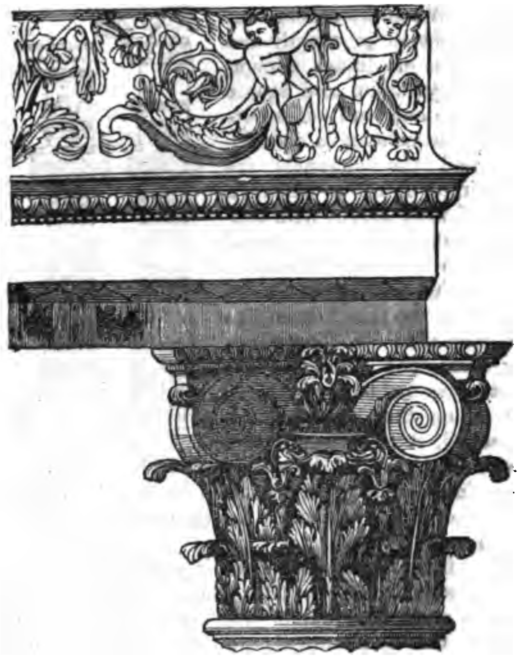
The flutes are twenty-four in number; monly semicircular in their plan. The base is similar to that of the composite cepting that two astragals are employed b scotiæ instead of one; but the Attick is ployed for the reasons before assigned.

"The Corinthian order," says Sir Wil bers, "is proper for all buildings wher gaiety, and magnificence are required. cients employed it in temples dedicated to Flora, Proserpine, and the nymphs o because the flowers, foliage, and volutes it is adorned seemed well adapted to t and elegance of such deities. Bein splendid of all the orders, it is extremel the decoration of palaces, publick square ries and arcades surrounding them; fo dedicated to the Virgin Mary, or to saints, and on account of its rich, gay, a appearance, it may with propriety be us tres, in ball or banquetting rooms, and i consecrated to festive mirth, or convi tion."

The Roman, or *Composite Order.*— (though not considered by them as a d was employed by the Romans princip umphal arches, the column and entablatu same as, or little differing from, the Cori

The difference was, however, suffici Italians to ground a new order upon. as being *composed* of the Ionick and Cori termed *composite,* and to justify the ap the name to the order in general, they the entablature the dentils of the Ionic mutules of the Dorick, and enrichments rinthian, and gave to the architrave but thus rendering it in some respects more more enriched than the latter, while the little but the name left in the compos whole order may be safely pronounced t without possessing grandeur, and rich, t titute of beauty.

The base commonly appropriated to th extremely beautiful: it consists of tw lower of which is considerably the large

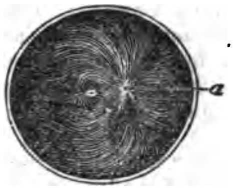


[Composite Order.]

scotiæ enclosing an astragal. This is called the *proper* base of the order, but the Attick is usually employed, being more simple, and consequently less expensive than the other.

The measures of this order, from Sir William Chambers, are as follows: the base, thirty minutes; the shaft, sixteen modules, twenty minutes; and capital, two modules, ten minutes. The architrave, forty-five minutes; the frieze, forty-five minutes; and the cornice, two modules. A column of this order is shown at *fig.* 2.

THE RETINA. By Dr. Wallace oculist New York.



[Fibres of Retina.]
a. Entrance of optick nerve.

What the grounds on which the image is received is in the *camera-obscura*, the retina is in the eye. This membrane consists of four coats; one of which beautifully reticulated, resembling the veins in a leaf after the soft part has been eaten away by insects, forms a semi-opaque screen to intercept the light. As the rays proceeding from a magick-lantern or admitted into a camera-obscura would form no image at the focus of the lens unless there was a muslin screen or other semi-opaque or opaque substance to intercept them, they would pass on and not be visible, so the light passing through the lens of the eye falls upon the network and forms an inverted image of external objects. Lying beneath the network in the human eye, the fibres of the optick nerve may be seen converging round a point at the focus of the lens. The probable use of this arrangement is to enable man to see very minute objects. Behind the fibres there is a bed of globules kept in place by a very delicate membrane called the coat of Jacob.

There has lately been much newspaper discussion in consequence of the denial of the fact that the image on the retina is inverted. Independently of such authorities as Kepler, Newton and Brewster, we may be easily satisfied of the inversion of the image by cutting a portion from the back of the eye of an animal recently killed. If the image were not inverted on the retina every thing would appear upside down, for pressure on one part of it gives an opposite impression to the brain. If I shut my eyes and press the retina of one of them with a finger on the outside, the circle of light that is thus produced will appear as if proceeding from the inside; if I press above, the circle will seem below and if I carry the finger completely round the eye the light will always be opposite to the finger. The inverted image is thus corrected by the nerve conveying an opposite impression.

ANECDOTE OF GENERAL WASHINGTON.

One Reuben Rouzy of Virginia owed the general about one thousand pounds. While president of the United States, one of his agents brought an action for the money; judgement was obtained and execution issued against the body of the defendant, who was taken to jail. He had considerable landed estate, but this kind of property cannot be sold in Virginia, unless at the discretion of the person. He had a large family, and for the sake of his children, preferred lying in jail to selling his land. A friend hinted to him, that probably General Washington did not know any thing of the proceeding, and that it might be well to send him a petition, with a statement of the circumstances. He did so—and the very next post from Philadelphia, after the arrival of his petition in that city, brought him an order for his immediate release, together with a full discharge, and a *severe reprimand* to the agent for having acted in such a manner. Poor Rouzy was consequently restored to his family, who never laid down their heads at night without first presenting prayers to heaven for "their beloved Washington." Providence smiled upon the labours of the grateful family, and in a few years Rouzy enjoyed the exquisite pleasure of being able to lay the money with the interest, at the feet of this truly great man. Washington reminded him that the debt was discharged. Rouzy replied, the debt of his family to the father of their country, and the preserver of their parent, could never be discharged; and the general, to avoid the pleasing importunity of the grateful Virginian, who would not be denied, accepted the money—only, however, to divide it amongst Rouzy's children, which he immediately did.

Old Colony Memorial.

MILITARY BOUNTY LANDS.

This tract of country generally denominated the Military Tract, was surveyed during the years 1815 and 1816, and the greater part subsequently appropriated in bounties to the soldiers of the regular army, who served in the late war between the United States and Great Britain. It is situated between the rivers Mississippi and Illinois, and extends from their junction due north by a meridian line, denominated the fourth principal meridian, one hundred and sixty-nine miles, presenting an irregular curvilinear triangle, the acute angle of which is at the junction of these two rivers. From this point the two rivers diverge, so as to make a distance of ninety miles between the extreme points of the northern boundary. Half way between the extremes the width is sixty-four miles. The base line running due east and west, and commencing seven miles above Quincy, on the Mississippi, and terminating at the Illinois about four miles below Beardstown, intersects the fourth principal meridian at right angles seventy-three miles above the junction of the Mississippi and Illinois rivers, and is fifty-two miles long. The whole tract according to the publick surveys contains two hundred and seven entire townships, of six miles square, and sixty-one fractional townships, containing together 5,360,009 acres, of which 3,500,000 have been appropriated in military bounties. The residue consists partly of fractional sections, bordering on the rivers, partly of fractional quarter sections, bordering on the township lines, containing more or less than one hundred and sixty acres, and partly of lands that were returned by the publick surveyors as unfit for cultivation; but there are also large reservations not coming within the above exception, being the overplus of lands after satisfying the military claims, subject to entry and purchase as other Congress lands. This tract of country lies between 38° 54′ and 41° 40′ of north latitude, and 13° west longitude from Washington city, and is bounded on the northwest for two hundred and fifty-five miles by the Mississippi river, and for about the same distance on the northeast by the Illinois. Thus do these two great rivers in their diverging course, with Rock river approximating from the north, form a spacious peninsula, furnishing a border to the bounty lands by a sheet of navigable waters for steam-boats more than five hundred miles in extent, leaving no part of the tract more than forty-five miles and the greater part not exceeding twenty miles from steam-boat navigation. A water communication may be easily opened between the Illinois river and lake Michigan by means of a canal. To effect this object 300,000 acres of land were donated to the state by an act of Congress in 1827; and the Legislature at the last session passed a law authorizing a loan of $500,000 on the credit of these lands, and appointed commissioners to carry this object into effect. It is expected that active operations will be commenced sometime during the present season. This communication between the Illinois river and the lakes, must eventually greatly increase the value of the bounty lands, by affording a choice of markets for their products, either at Chicago, Detroit, Buffalo, New York, Montreal or Quebec, by way of the Illinios canal and the lakes, or by the natural channels of the rivers at St. Louis and New Orleans. It is presumed that the Illinois may be ascended by loaded boats with more facility, than any of the rive
west, the current being unusually gentle, a
general exceeding two miles an hour. Th
is smooth, and the water deep and remarkab
and there are but few sand-bars, and n
rocks, sawyers or snags, until you reach the
Rock," about one mile above the town
Here you meet with the first permanent ob
being a ledge of sand-stone rocks, immed
the foot of the lower rapids, and extending
across the river.

The town of Utica may therefore be ju
sidered at the head of steam-boat navigatic
Illinois river, although steam-boats in hig
frequently ascend as high as Ottowa, the se
tice of La Salle country, at the mouth of F
The mean width of this river is about four
yards. At a distance of about one hundred
miles from its mouth the river expands i
is called "Peoria lake" which is twenty mi
and varies from one to three miles in wi
waters are very transparent, its margin e
beautiful scenery, and its surface is freque
ered with innumerable flocks of pelicans
geese and ducks, whose discordant notes wh
ened by the noise of the fowlingpiece, or f
other cause, may be heard at considerable c
up and down the water. It also abounds wi
variety of fish to be found in any of the
waters. It may be safely asserted, that th
sheet of water of equal extent in any of the
states, containing such an abundance and va
fish and fowl as this lake.

The mean width of the Mississippi river b
on the bounty lands extends three fourths o
It is beautifully interspersed with small island
ber land, and very much resembles that part of
river, which lies between Louisville and its
its waters being equally transparent, and its
equally gentle. Its navigation from St. Lou
foot of the Des Moines rapids, forty-five mil
the town of Quincy, is never obstructed, ex
a few weeks during the winter season, w
blocked up by the ice. This however, c
occur every season, as we had arrivals of stea
at Quincy from St. Louis, as late as the n
January of the past winter. From the foo
Des Moines rapids to Galena, the navigatio
uncertain depending entirely on the season,
stage of the water. During some seasons,
no material difficulty in ascending the riv
steam-boats of light draught, to the upper Mi
lead mines and Prairie du Chien, and even
up as the fall of St. Anthony a distance ex
nine hundred miles above the city of St
There is never much difficulty in passing t
Moines and Rock river rapids, in the ascen
there is a sufficient depth of water, the rapi
the current not being so great as to requir
additional power to enable boats to effect a
In the interiour of the tract, and traversing it in
directions, are several other rivers and creeks
consequence in a commercial point of vi
nevertheless, of great utility in other respect
settlements in their vicinity. Of these Spoo
derson, Edwards, and Pope's river, and C
Kickapoo or Red Bud, Copperas, Otter, M
McCraney's Hadley's Mill, and Bear Cree

the most considerable. Spoon river has it sources in the northeast corner of the tract, in the tier of townships numbered fifteen north, and runs in a southwesterly direction, until it reaches township six north, range one east, when it changes its course and continues in a southeasterly direction, until it empties itself into the Illinois river, at the southwest corner of fractional township four north, of range four east, in Fulton county. This river with its tributaries, in the course of its meanders, waters the counties of Putnam, Peoria, Henry, Knox, Warren, McDonough and Fulton, and is a good mill-stream, but too small for the purpose of navigation. Henderson's river rises in the northwest corner of Knox county, in townships twelve and thirteen north, range one east, and runs in a southwest direction through Warren county, and empties itself into the Mississippi river, at the northwest corner of township ten north, range five west, about three miles and a half below the lower Yellow Banks. The Cedar fork of Henderson rises in township eleven north, range one east, near the west line of Knox county, runs a westerly course through Warren county, and intersects the main Henderson, near the east line of township twelve north, of range four west in that county. Edward's river has its sources in township fourteen north, range three east, near the centre of Henry county, and runs a westerly course through Henry and Mercer counties, until it reaches range line five west, thence nearly due south until it empties itself into the Mississippi river, near the middle of township thirteen north, range five west, about two and a half miles below the upper Yellow Banks, now called New Boston, in Mercer county. Pope's river rises near the eastern boundary of Mercer county, and runs generally a westerly course, inclining a little south, through the entire width of that county, and empties itself into the Mississippi river, about four miles below the mouth of Edwards river. Crooked creek is the next stream in importance, for all purposes and in the extent of the country watered by it, to Spoon river, and is much more deserving the appellation of *river*, than either Henderson, Edwards or Pope's rivers. The main branch of this creek rises in township seven north, range six west, about twelve miles from the Mississippi bluffs in Hancock county, and runs in a southeasterly direction through Hancock, McDonough, and Schuyler counties until it reaches the middle of township one south, range two west, it then changes its course and runs nearly due east about eight miles, and empties itself into the Illinois river at the northeast corner of section fifteen, in township one south, range one west seven miles below Beardstown. The Drowning Fork of this creek, which is nearly as large as the principal stream, rises in the northeast corner of McDonough county near the line of Fulton, and runs in a southwesterly direction until it intersects the main creek, near the middle of township seven north, range four west, on the west side of McDonough county. This is among the best mill-streams on the military tract. Kickapoo or Red Bud, rises in township nine north, range five east, in Peoria county, and runs a southeasterly direction through that county, and empties itself into the Illinois river about three miles below the town of Peoria. Copperas creek rises in township eight north, range five east, and runs nearly a south course through Peoria county, passes through a small part of Fulton county, and empties itself into the Illinois river, in township six north, range five east. Bear creek rises in the southern part of Hancock county and the northeast part of Adams county, and runs in a southwest direction through the north part of Adams, and falls into the Mississippi river in township two north, range nine west, about twelve miles above the town of Quincy. Mill creek rises near the centre of Adams county, and runs in a southwesterly direction through that county, and empties itself into the Mississippi river, about nine miles below the town of Quincy. McCraney's creek rises near the southeast corner of Adams county, and runs in a southwesterly direction through Pike county, and empties itself into the Snicarty, a sluice of the Mississippi river. M'Kee's creek rises near the centre of Adams county and runs in a southeasterly direction through Adams, Schuyler and Pike counties, and empties itself into the Illinois in township three south, range two west, about two miles above the town of Naples.

There are also many other smaller streams generally tributaries to those already mentioned, affording sufficient power for mills and other machinery. Considerable bodies of timber are to be found on the margins of all these streams; with but few exceptions, the lands of which are generally broken, and the soil not so productive as that of the adjacent prairies. And it may be remarked in general in relation to the bluffs of the Mississippi and Illinois. as well as those upon the smaller rivers that they exhibit a surface too rough to be cultivated and a soil too thin for successful tillage. The hills, or bluffs as they are called in this country, which are every where to be seen on the margins of the Mississippi and Illinois rivers, are generally neither very high nor precipitous, and very rarely approach to the water's edge. The bottoms between the river and bluffs are generally alluvial and expand from one to five miles in width. Two thirds of these bottom lands are subject to occasional inundation from high water, and when this happens the river is seen gradually to rise several successive days until the channel within the banks is no longer capable of containing the immense accumulation of waters from above, at which time they burst over the banks in all directions, extending themselves from bluff to bluff in all the terrifick grandeur of a mighty river. Again they gradually recede until they are confined within the ordinary channel. When these inundations occur as late in the season as the months of June and July, a sickly season arising from the noxious vapours engendered by a decay of vegetation may be expected in these and contiguous parts of the country; but if early, and the bottoms become dry before the hot season commences, no difference in the health of the inhabitants is expected to ensue on that account. Taking the military tract together, about two thirds may be set down as prairie land, and the remaining one third as timber land. The detached groves, or those which are found occasionally as islands in the prairies, and those at the heads or sources of the streams generally produce the finest timber, with a soil generally of good quality, and not unfrequently very rich. The soil on the prairies is generally good, and a large portion of it may be considered as first rate, having either a black vegetable mould, or a dark sandy loam from fifteen to thirty inches deep, generally bedded on a stiff yellow clay. Many of the prairies are of convenient dimensions for farming operations, others too large at present, and again we find many only large enough for a single farm. The emigrant in travelling over the delightful region in the spring and summer months, will generally see timber either before him or to the right or left, within a few miles, but he will occasionally after descending one of our beautiful slopes to the verdant valley beneath, through which the gentle rivulet is meandering its course with its flowery border, get as it were out of sight of land, while his vision is bounded only by the blue horizon above, and not a tree can be discovered as far as the eye can reach. Again when he approaches the summit of the opposite slope, his vision is relieved with the green forest on his right and left, and a cluster of beautiful island-groves immediately in the advance, with their varied shrubbery in full bloom, scattering its fragrance for many a mile around; the prairie in the mean time, being covered with a smooth green coat of grass, and innumerable flowers of every variety and hue, which blossom and decay in succession from the first opening of the spring until the severe frosts of winter. There is also a species of prairie which is flat, wet, and the soil cold, heavy and for the most part thin and unproductive. This description of prairie is most generally to be found on the dividing ridges or high lands between water-courses, and not unfrequently on the sides of declivities; made so no doubt, by the seepings of the waters, which collect on the bosoms of large flat prairies, and from thence find a subterraneous passage to the streams below through the sides of the neighbouring hills.

There is another description of lands denominated the *barrens*, being neither timber-land nor prairie, but partaking partly of each, and lying between them. This however, constitutes but a very small portion of the lands on the military tract. The surface is generally rolling, and often much broken, being intersected at very short intervals by numerous ravines, which connect themselves to some water-course in the neighbourhood, and thereby furnish aqueducts for the adjacent prairies, through which to discharge the vast quantities of water which fall upon them during the rainy seasons of the year. These lands are generally overgrown, first with hazel thickets, and afterwards with scattering trees of oak and hickory, generally of stinted growth, owing, no doubt, to the injury they receive when young from the frequent burnings of the prairies; the soil is thin, and the wild grass grows taller than upon the smooth prairies, but is generally of a coarse, rough quality, being much inferiour to prairie grass, both for grazing and for hay. It is generally believed that such lands will produce wheat, clover, timothy, and blue grass, quite as well as our lands of better quality, and that they are better adapted to the growth and culture of fruit-trees.

It has been a subject of much inquiry and speculation with persons who visit this part of the country previous to emigration, what our citizens are to do for timber and fire-wood on the prairies, when our forests and groves are cut away, and applied to the purposes of present improvement and fuel; and fears are not unfrequently expressed by those who are ignorant of our resources, that it will be impracticable on this account even to settle and improve
our large prairies, and that they will
remain as so many barren wastes.

This is a great mistake, as it is kn
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Esq. is now making an experiment at
four miles north from Quincy; his g
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groves and forests commence a grad
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see another tier of farms springing up
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farm succeeds farm, as the timber gro
entire prairie is occupied. The travel
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which he is travelling, and the dista
several parts of it to the nearest timbe
occurrence to find a prairie on any part
tract as much as ten miles across, wit
timber running into it, and approximat
at convenient intervals. My official d
the last five years, made it necessary
the rounds of the Circuit, to travel
part of this country, and I cannot now
spot on the whole tract where a man w
at a greater distance from timber in so
other than six miles, and a very few pl
distance would exceed three or four
remarks apply exclusively to our large
the prairies generally are not larger tha
for ordinary farming purposes. The
bottoms are commonly thickly timb
the kinds of trees that grow on such la
seen the black and white walnut, alw
rich land, ash, elm, hackberry, lynn
burr oak, honey-locust, mulberry, s
cotton-wood and numerous grape-vin
tached groves, and those at the heads
frequently produce the same kinds of
bottoms, and the lands within them, a
part, equally fertile. Although the

forests and groves not unfrequently indicate the quality of the land in the adjoining prairies, yet it is by no means a certain criterion, as I have frequently seen prairie lands of excellent quality, with a soil varying from eighteen to thirty inches deep, adjoining woodlands of oak and hickory of stinted growth, where the soil at best did not exceed the second quality; on soils high, broken, and thin the prevaling growth is oak and hickory. Taking the country altogether, there are but few springs; but water may be plentifully obtained any where on the smooth prairies, by digging from fifteen to forty feet below the surface. The well water is pure and salutary, and generally preferred to the spring water. The surface of the ground every where in this country, is remarkably free from stones except on the rivers, creeks and branches, in which many good quarries are found both of lime and sand-stone.

With the exception of stone coal, there are no mines on the military tract. Some specimens of iron, lead and copper ore have occasionally been picked up, but not in sufficient quantities to justify the belief that any discoveries will be made worthy of pursuit. The agricultural productions of this part of Illinois are Indian corn, wheat, rye, oats, barley, potatoes, hemp, flax, etc. The tame grasses, such as timothy, red clover, red top or herd grass, are also now cultivated to some extent, and so far succeed well. The principle articles produced for exportation, consist in horses, beef cattle, milch cows, live hogs, barrelled beef and pork, bacon, lard, hides, butter, Indian corn, wheat and flour. Some of our backwoodsmen, also, still continue to carry on a considerable traffick with the merchants, in deer skins, and furs such as otter, muskrat and raccoon, and in honey and bees-wax. Some farmers have been frequently known to make more money in this way, than from the product of their farms. Horses, cattle, sheep, and hogs can be raised here with but little trouble and expense, compared with the eastern states. The mildness of the climate, with the wild grass upon the prairie and bottom lands, has not unfrequently relieved the owners from all care and expense of feeding them through the whole year; but it is generally necessary to feed from the commencement of December until the latter part of March. When cattle are fed and attended to in the best manner by our most provident farmers, the expense is less by one half, than wintering the same species of stock in the eastern states. The shortness and moderation of the winter seasons, and the abundant forage which may be gathered from the wild prairies, render the raising of stock both cheap and easy. The grass when cut from the upland prairies and well cured, makes an excellent substitute for hay; and cattle will keep in good order the whole winter on this food alone. It has also been frequently remarked, that both horses and cattle fatten quite as fast in in the spring and summer, on the wild grass of the prairies, as upon the tame pastures of the east. And the richness and flavour of our beef thus fattened has been much esteemed at St. Louis and New Orleans, and is generally reckoned of the finest quality.

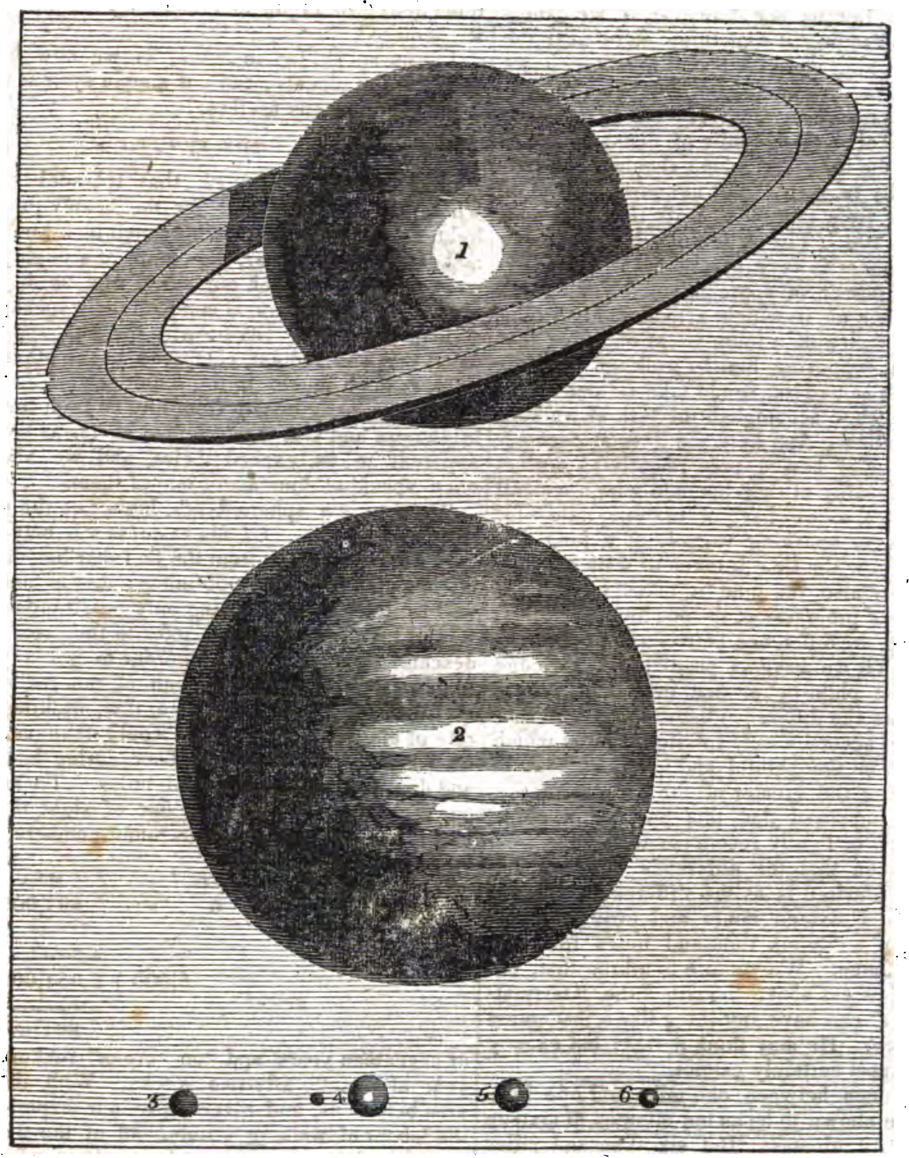
The bounty lands extend from north to south over about two and a half degrees of latitude, the medium width of which exceeds forty degrees north, and affords a climate not uncongenial to the constitution of men from the northern and middle states. The climate seems also to be well adapted to the constitution of emigrants from Kentucky, Tennessee and the Carolinas, who in general, enjoy as good health as those from the more northern states. It is a fact, however, which ought not be disguised, that a large portion of the lands on the margins of the Mississippi and Illinois rivers, as well as those upon the banks of the smaller streams, including such also as border upon the large, flat, wet prairies, may be reckoned among the situations most unfavourable to health. The stagnant waters which sometimes remain after the overflowings of these rivers, not unfrequently produce pestilential vapours, proceeding from putrescent vegetable substances, which very often engender malignant fever and agues, and prove destructive to the health and vigour of the newly settled emigrant and his family. Habitations should, therefore, at the commencement of a settlement be as far removed as convenient from stagnant waters and low, rich alluvial grounds, which are thickly shaded by forest trees, and located on more open and elevated ground, where air and water can be enjoyed in their native purity. Lands of this description, which in a state of nature, prove most injurious to health, when drained, opened to the sun, and cleared of the trees and rank weeds, which generally grow upon them, have often become salubrious places of habitation. But the new comer should be aware before he is acclimated, that it is a dangerous experiment to attempt their improvement. But of this quality, there is a small part only of the whole tract, most of the residue furnishing situations as healthful as any part of the western country, Old Kentucky not excepted.

Our winters generally exhibit a temperature of climate much milder than that of the northern Atlantick states. Snow rarely falls to the depth of six inches, and as rarely remains over ten or twelve days. There are, however, occasionally short periods of very cold weather, but they seldom continue longer than three or four days at a time. What may be considered winter weather does not usually continue longer than from ten to twelve weeks, during more than half of which period the ground frequently remains unfrozen. The summers are long, and remarkably uniform, of which the extreme does not exceed the hottest days in the northern states.

Taking all the bounty tract together, and there is no region of country in the west, more eligibly situated for all the purposes of agriculture and commerce. The lands every where with but few exceptions, are of the best quality, and in a manner surrounded by a sheet of navigable waters; and the country exhibits a climate of great variety for the space occupied; whereby its productions are varied and the means of traffick greatly increased and facilitated. Lands of excellent quality may yet be had at the government price of one dollar and twenty-five cents per acre, in desirable parts of the country so that means of wealth, or at least of a comfortable competence, are still within the reach of the poor as well as the opulent. What motives of advancement are here held out to the industrious and skilful cultivator of the soil—what prospects of wealth to the industrious mechanick, and enterprising merchant—what a wide field for speculation is not in fact here presented to the view of the whole people of the west.

Western Monthly Magazine.

ASTRONOMY.



[A General View of the Planets.]

THE chief difficulty in writing upon any thing connected with astronomical science arises from the all but absolute impossibility of the reader perfectly appreciating the *distances* of which we have occasion to speak. To illustrate this to his own mind, let any reader think of a country as being about six thousand miles from America. In the words themselves there is nothing very striking; they come sonorously and well from the lips—but what idea is attached to them? It is quite possible to attach a correct, or a very nearly correct idea to them; but though quite possible, it is by no means so easy a matter to do so as at first sight it may appear to be. It is by gradually and carefully comparing the name and the reality of distance on a far less magnificent scale, that we must proceed. Those of us who reside in the country have a very exact notion of one mile, from having repeatedly walked from one milestone to another; those of us who live in tropolis have very nearly as exact an idea from having repeatedly passed along a stree is reputed to be about a mile long. Of one mi we have a very good idea, because we have edly experienced the precise amount of exertion necessary to enable us to accomp distance. But does it follow that we have like a correct idea of the reality of six miles? Not so. We know what one mil we know that 1×6000=6000. But the s of multiplying the one number into the ot us nothing like a correct idea of the reali product. Our notion of it is very vague— of it as being a very vast distance; if very tive, we may not improbably even exagg distance; but of the distance, of the exact we do not, unless by mere chance, ever ap to a just idea. Let us see, however, if we cannot find a means of getting at something more near the truth—at something more near that idea which we should have of the distance if we had actually traversed it awake and observant. Having an accurate notion of the reality of one mile of distance, let us keep that and the time and labour requisite to traverse it carefully in view. Let us now, instead of leaping at once from 1 to 6000, walk in our thought only from 1 to 100. The difference betweon even those two numbers is very great; but it is not too great for our power of appreciation. Taking ten minutes for the time in which a moderately strong and alert man will walk a mile, we at once see that the same man, supposing him to walk on uninterruptedly at that same rate, would take sixteen hours and forty minutes to accomplish the task of walking one hundred miles. And here we have at once secured the means of having pretty nearly as correct an idea of the reality of that distance which we call a hundred miles, as we have of the one mile—for we are no longer speaking vaguely of a long distance. We know the time it takes to walk the one mile—we know also the time it takes to walk, at the same rate of progression, the one hundred miles; and comparing the difference between the two times of both of which we have as positive a knowledge as the greatest philosopher that ever lived, we at once appreciate the difference between the two distances with an accuracy only inferiour to that which would result from the painful and laborious task of actually walking the greater of the two distances. Let it not be supposed that this process is either useless in itself or lightly recommended by us.

We have seen that the difference between one mile and one hundred is as the difference between ten minutes and sixteen hours and forty minutes. But we read of a city six thousand miles from our place of residence. We venture to affirm, that, except by the process above described, no "tarry-at-home traveller" can have any thing like a just notion of that distance. He may think it vast; but exactly how vast he most certainly cannot.

The difference between one mile and one hundred has been shown to be as ten minutes to sixteen hours and forty minutes. But six thousand miles are sixty hundreds of miles; therefore we say—

ho.	min.				days.	ho.
16	40	×	60	=	41	4

or six weeks all but twenty-four hours. And now, reader, reverting to your experience of a mile: remembering how long a distance that seemed, and yet remembering that you were only ten minutes in accomplishing it; what an enormous distance, compared to what you ever before appreciated it at, do six thousand miles seem, which would take up all your sleeping and waking hours for more than a ninth, indeed very nearly an eighth part of a year!

If even in reading geography and history, in which we speak only of thousands of miles, it be at once so important that we should, and yet so likely that we shall not understand accurately the realities of the distances of which we read, how doubly necessary does a simple and yet impressive system of judging of distances become when we read of the planets; when, instead of thousands of miles, we read of millions! Without careful and systematick reflection, how vague and shadowy the knowledge we acquire!

Let us speak, for instance, as we now have to speak of the planets; and our simple system will be found by no means useless.

THE SUN.

The ancients reckoned that splendid orb, to whom we are indebted for the beauty-producing light, among the planets: but scientifick knowledge makes him a fixed star, the centre of a mighty planetary system, of which our earth, vast as it is, and abounding in wonders, is comparatively speaking but a small part. The reason why the sun appears to us so vast and radiant, compared to the other fixed stars, is to be sought in the difference of distance; were we equally distant from him as from them, his brightness and size would be not as far as would be apparent to us, exceed theirs, and we should at once speak of him as of one of them.

The sun is a spheroid orb, higher at the equator than at the poles. Of his vastness we may form a very tolerable notion from the fact that his diameter is computed to be 894,000 miles; that of our earth, vast as it seems to us, being only 6,970 miles!

And here we may again refer to the necessity of descending to particulars, in order to get any thing like a tolerably correct notion of the reality of a vast distance. We have seen, that, walking at the rate of six miles an hour, it would take us nearly six weeks of uninterupted labour, during both night and day, to walk six thousand miles. To facilitate our reckoning we will leave out of sight the eight hours, and take six weeks in round numbers.

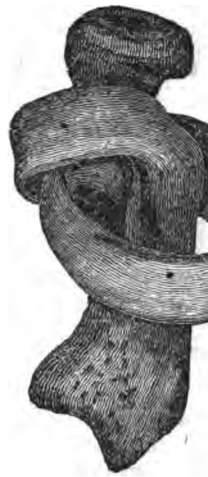
We say then,

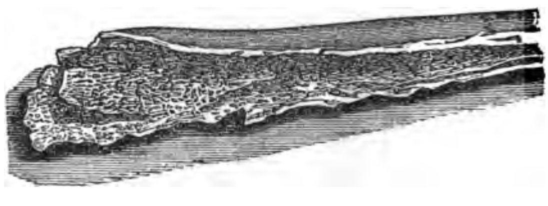
	Miles.		Weeks.		Miles.
If	6,000	:	6	: :	894,000
					6
			6|000	)	5,364|000
					894 weeks;

or seventeen years and ten weeks! reckoning the year at exactly fifty-two weeks. With these figures before us, and reverting to our experience of the labour of walking a mile, and of the time consumed in doing so, can we fail to have a far better idea of the diameter which it would take so many years of travelling day and night to traverse, than if we merely saw and mechanically enumerated the figures 894,000? Few, we think, will venture to assert any thing so absurd; and we strenuously recommend our readers invariably to submit their appreciation of the statements of vast distances to this at once simple and infallible test. Astronomers are enabled to assure us that we are 95,000,000 of miles from the sun; in other words, (and following up the method of judging of distance laid down above,) [illegible] walk night and day, at the rate of ten miles an hour, it would take us to traverse this distance one thousand eight hundred and twenty-six years, and forty-eight weeks!

Distant as the sun is from us, he is, as we shall by and bye have to show, yet more distant from the other planets which revolve around him. The ancients, conscious that they derived both heat and light from the sun, conceived that splendid luminary to be a globe of fire. Setting aside the

the earthy or inorganick matter consists of phosphorick acid combined with lime, forming phosphate of lime. The cellular tissue is aggregated into plates or laminæ, which are placed one upon another, leaving between them interspaces or cells, in which is deposited the earthy matter (phosphate of lime.) If a bone, for example, the bone called the radius, one of the bones of the fore-arm, be immersed in diluted sulphurick, nitrick, muriatick, or acetick acid, it retains its original bulk and shape; it loses, however, a considerable portion of its weight, while it becomes so soft and pliable, that it may be tied in a knot. In this case, its earthy matter is removed by the agency of the acid, and is held in solution in the fluid; what remains is membranous matter (cellular tissue.) If the same bone be placed in a charcoal fire, and the heat be gradually raised to whiteness, it appears on cooling as white as chalk; it is extremely brittle; it has lost much of its weight, yet its bulk and shape continue but little changed. In this case, the membranous matter is wholly consumed by the fire, while the earth is left unchanged. Every constituent atom of bone consists, then, essentially of animal and earthy matter intimately combined. A little more than one third part consists of animal matter, (albumen,) the remaining two thirds consist of earthy matter, (phosphate of lime,) other saline substances, as the fluate of lime and the phosphate of magnesia, are also found in minute quantity, but they are not peculiar to bone.


[Membranous portion of bone; the earthy portion being so completely removed, that it is capable of being tied in a knot.]


[Earthy portion of bone.]

In general, the osseous tissue is placed in the interiour of the body. Even when bone approaches the surface, it is always covered by soft parts. It is supplied with but few blood-vessels, with still fewer nerves, with no absorbents large enough to be visible, so that though it be truly alive, yet its vital properties are not greatly developed. The arrangement of its component particles is highly curious, the structure, the disposition, and the connexion of individual bones afford striking examples of mechanism, and accomplish most important uses in the economy; but those uses are dependent rather upon mechanical than vital properties. The chief uses of bone are—1. By its hardness and firmness to afford a support to the soft parts, forming pillars to which the more delicate and flexible organs are attached and kept in their relative positions. 2. To defend the soft and tender organs by forming a case in which they are lodged and protected, as that formed by the bones of the cranium for the lodgment and protection of the brain; by the bones of the spinal column for the lodgment and protection of the spinal cord; by the bones of the thorax, for the lodgment and protection of the lungs, the heart, and the great vessels connected with it. 3. By affording fixed points for the action of the muscles, and by assisting in the formation of joints to aid the muscles in accomplishing the function of locomotion.

All the primary tissues which have now been considered consist of precisely the same proximate principles. Albumen is the basis of them all; with the albumen is always mixed more or less gelatin, together with a minute quantity of saline substance: to the osseous tissue is superadded a large proportion of earthy matter. With the exception of the mucous, the organization of all these tissues is simple; their vital properties are low in kind and in degree; their decided properties are physical, and the uses they serve in the economy are almost wholly mechanical.

THE WINDS.

BY MISS H. F. GOULD.

We come, we come, and we feel our might,
As we are hastening on in our boundless flight,
And over the mountain, and over the deep,
Our broad, invisible pinions sweep.
Like the spirit of Liberty, wild and free!
And ye look on our works, and own 'tis we;
Ye call us the Winds, but can ye tell
Whither we go, or where we dwell?

Ye mark, as we vary our forms of power,
And fell the forest, or fan the flower,
When the hare-bell moves and the rush is bent,
When the tower's o'erthrown, and the oak is rent;
As we waft the bark o'er the slumbering wave,
Or hurry its crew to a watery grave;
And ye say it is well, but can ye trace
The wandering Winds to their secret place?

And whether our breath be loud and high,
Or come in a soft and balmy sigh,
Our threatnings fill the soul with fear,
Or our gentle whisperings woo the ear
With musick aerial, still 'tis we;
And ye list, and ye look, but what do you see?
Can you hush one sound of our voice to peace,
Or waken one note when our numbers cease?

Our dwelling is in the Almighty's hand,
We come and go at his command,
Though joy or sorrow is in our track,
His will is our guide, and we look not back
And if in our wrath ye would turn away,
Or win us in gentlest airs to play,
Then lift up your hearts to Him who binds
Or frees at his will the obedient Winds.

OFFICERS OF THE UNITED STATES.

The following list of the principal officers of the general government, from its commencement under the constitution until the present time, is one likely to be interesting to many, and generally useful as matter of reference:

PRESIDENTS.

1789. George Washington, of Virginia.
1797. John Adams, of Massachusetts.
1801. Thomas Jefferson, of Virginia.
1809. James Madison, of Virginia.
1817 James Monroe, of Virginia.
1825 John Quincy Adams, of Massachusetts.
1829. Andrew Jackson, of Tennessee.
1837. Martin Van Buren, of New York.
1841 Wm H Harrison Ohio

VICE PRESIDENTS.

1789. John Adams, of Massachusetts.
1797. Thomas Jefferson, of Virginia.
1801. Aaron Burr, of New York.
1805. George Clinton, of New York.
1813. Elbridge Gerry, of Massachusetts.
1817. Daniel D. Tompkins, of New York.
1825. John C. Calhoun, of South Carolina.
1833. Martin Van Buren, of New York.
1837. Richard M. Johnson, of Kentucky.

SECRETARIES OF STATE.

1789. Thomas Jefferson, of Virginia.
1794. Edmund Randolph, of Virginia.
1795. Timothy Pickering, of Pennsylvania.
1800. John Marshall, of Virginia.
1801. James Madison, of Virginia.
1809. Robert Smith, of Maryland.
1811. James Monroe, of Virginia.
1817. John Quincy Adams, of Massachusetts.
1825. Henry Clay, of Kentucky.
1829. Martin Van Buren, of New York.
1831. Edward Livingston, of Louisiana.
1833. Louis McLane, of Delaware.
1835. John Forsyth, of Georgia.

SECRETARIES OF THE TREASURY.

1789. Alexander Hamilton, of New York.
1795. Samuel Dexter, of Massachusetts.
1801. Oliver Wolcott, of Connecticut.
1802. Albert Gallatin, of Pennsylvania.
1814. George W. Campbell, of Tennessee.
1814. Alexander J. Dallas, of Pennsylvania.
1817. William H. Crawford, of Georgia.
1825. Richard Rush, of Pennsylvania.
1829. Samuel D. Ingham, of Pennsylvania.
1831. Louis McLane, of Delaware.
1833. William J. Duane, of Pennsylvania.
1833. Roger B. Taney, of Maryland.
1834. Levi Woodbury, of New Hampshire.

SECRETARIES OF WAR.

1789. Henry Knox, of Massachusetts.
1795. Timothy Pickering, of Pennsylvania.
1796. James McHenry, of Maryland.
1800. Samuel Dexter, of Massachusetts.
1801. Roger Griswold, of Connecticut.
1801. Henry Dearborn, of Massachusetts.
1809. William Eustis, of Massachusetts.
1813. John Armstrong, of New York.
1815. William H. Crawford, of Georgia.
1817. Isaac Shelby, of Kentucky, (did not accept the appointment.)
1817. John C. Calhoun, of South Carolina.
1825. James Barbour, of Virginia.
1828. Peter B. Porter, of New York.
1829. John H. Eaton, of Tennessee.
1831. Lewis Cass, of Ohio.
1837. Joel R. Poinsett, of South Carolina.

SECRETARIES OF THE NAVY.

1798. George Cabot, of Massachusetts.
1798. Benjamin Stoddard, of Maryland.
1802. Robert Smith, of Maryland.
1805. Jacob Crowninshield, of Massachusetts.
1809. Paul Hamilton, of South Carolina.
1812. William Jones, of Pennsylvania.
1814. Benjamin W. Crowninshield, of Massachusetts.
1818. Smith Thompson, of New York.
1823. Samuel L. Southard, of New Jersey.
1829. John Branch, of North Carolina.
1831. Levi Woodbury, of New Hampshire.
1834. Mahlon Dickerson, of New Jersey.

POSTMASTERS-GENERAL.

1789. Samuel Osgood, of Massachusetts.
1791. Timothy Pickering, of Pennsylvania.
1795. Joseph Habersham, of Georgia.
1802. Gideon Granger, of New York.
1814. Return J. Meigs Jr., of Ohio.
1823. John McLean, of Ohio.
1829. William T. Barry, of Kentucky.
1835. Amos Kendall, of Kentucky.

CHIEF JUSTICES OF THE SUPREME COURT.

1789. John Jay, of New York.
1796. William Cushing, of Massachusetts.
1796. Oliver Ellsworth, of Connecticut.
1800. John Jay, of New York.
1801. John Marshall, of Virginia.
1836. Roger B. Taney, of Maryland.

ATTORNEYS-GENERAL.

1789. Edmund Randolph, of Virginia.
1794. William Bradford, of Pennsylvania.
1795. Charles Lee, of Virginia.
1801. Levi Lincoln, of Massachusetts.
1805. Robert Smith, of Maryland.
1806. John Breckenridge, of Kentucky
1807. Cæsar A. Rodney, of Delaware.
1811. William Pinkney, of Maryland.
1814. Richard Rush, of Pennsylvania.
1817. William Wirt, of Virginia.
1829. John McPherson Berrien, of Georgia.
1831. Roger. B. Taney, of Maryland.
1834. Benjamin F. Butler, of New York.

Cincinnati Gazette.

THE raven may be said to be of a social disposition, for, after the breeding season, flocks of f[illegible] fifty, or more, may sometimes be seen, as is observed on the coast of Labrador, and on the Missouri. When domesticated, and treated with kindness, it becomes attached to its owner, and will follow him about with all the familiarity of a confiding friend. It is capable of imitating the human voice, so that individuals have sometimes been taught to enunciate a few words with great distinctness.

POPULAR MEDICAL OBSERVATIONS.

[The following article forms the second chapter of Dr. Johnson's "Economy of Health," just published by the Harpers, from the English edition. The author divides the life of man into ten epochs or periods, of seven years each—denominating each one, a Septenniad.]

THE FIRST SEPTENNIAD.

One to seven years.

For some time after man's entrance into the world, his existence is merely animal, or physical. He cries, feeds, and sleeps. His intellectual functions are nearly null; while those of the little bodily fabrick are in a state of the most intense activity. Gradually the senses awake, and the avenues of communication between the surrounding world and the living microcosm are opened. External impressions are conveyed to the censorium or organ of the mind, and there produce sensations, which become progressively more distinct, and, by frequent reiteration, lay the foundation of memory and association. During the first septennary period, REFLECTION can hardly be said to take place. Nature is busily employed in building up the corporeal structure—and the mind is occupied, almost exclusively, in storing up those materials for future thought, which the vivid senses are incessantly pouring in on the sensory of the soul.

These few facts (and they might be multiplied to any extent) may furnish important hints to the parent, the pedagogue, and the philanthropist. It is during the first and second Septenniads that the foundations of health and happiness, of physical force, intellectual acquirements, and moral rectitude, are all laid! Yet the arch enemy of mankind would have found it difficult to devise a system or mode of education for body and mind, better calculated to mar each and every of the above objects, than that which is adopted by the wise men of the earth at this moment. The first and second Septenniads are probably the most important to the interests of the individual and of society, of the whole ten. It is while the wax is ductile that the model is easily formed. In the early part of childhood, and even of youth, every fibre is so full—so exuberant of vitality, that the rest is pain, and motion is pleasure. In infancy the ORGAN of the mind presides over, and furnishes energy to, every other organ and function in the body. At this period, be it remembered, these organs and functions are in the greatest degree of growth and activity; and therefore the brain (or organ of the mind) requires to be at liberty to direct its undivided influence to their support. If it were possible to bring intellectual operations into play in the mind of the infant, the brain could not supply the proper nervous power for digestion, assimilation, and nutrition; and the whole machine would languish or decay. Now these facts apply, more or less, to a great part of the first SEPTENNIAD—or even of the second—and here we have the true physiological cause and explana[illegible] of the havock which is produced in youthful [illegible]mes by premature exertion of the intellectual faculties! Nor is it the body exclusively that suffers from precocious culture of the mind. The material tenement of the soul can not be shattered without injury to its spiritual tenant. It may be true, in some figurative sense, that

> "The soul's dark cottage, batter'd and decay'd,
> Admits new lights through chinks which time has made."

This can only refer to the common wear and tear of body, and the lights of age and experience—but even in this point of view, I doubt the dogma of the bard, and apprehend that the said lights would shine full as well through the proper windows of the "soul's dark cottage," as through those cracks and rents that are effected by time and infirmity.

I have alluded to the Spartan custom of leaving the youth, during the first seven years, under the guidance of the parents, who permitted the physical powers of their offspring to develop themselves without control. What is the case with us? During a considerable portion of that period the youth "is got out of the way," and imprisoned in a scholastick hotbed or nursery, where the "young ideas," instead of being left to shoot out slowly, are forced out rapidly to the great detriment of the intellectual soil, thus exhausted by too early and too frequent crops.

It has been shown that the organ of the mind, in the first stages of our existence, is exclusively occupied with its *animal* functions. It soon, however, is able to allot a portion of its power to the operations of the immaterial tenant. If this power were more gradually and gently exercised than it now is, we would have stronger frames and sounder minds. We might unite, in a considerable degree, the strength of the savage with the wisdom of the sage. As education, in this as well as in the two succeeding Septenniads, is both physical and moral, we shall adopt this division of the subject.

PHYSICAL EDUCATION OF THE FIRST SEPTENNIAD

1. FOOD.—It is fortunate for man that nature furnishes him with sustenance during the first nine months of his existence. The milk of a healthy nurse is a more salutary and scientifick compound of animal and vegetable nutriment than he ever afterward imbibes. He has hardly left his mother's bosom, however, before the work of mischief commences, which seldom ceases till he approaches a second childhood, or has suffered severely by the imprudence of his parents and the early indulgence of his own appetites! Nature furnishes teeth, as solid food becomes necessary; and the transition from milk to meat should not be too abrupt. The teeth are protruded slowly and successively; and, during this period, milk and farinaceous food should preponderate over that which is purely animal.

But errours of diet, in the first Septenniad, do not consist so much in the quantity of food as in the provocative *variety* with which the infantile and unsophisticated palate is daily stimulated. The rapid growth of infancy requires an abundant supply of plain nutritious aliment; but it is at this early period that simplicity in kind, and regularity in the periods of meals, would establish the foundation for order and punctuality in many other things, and thus conduce to health and happiness through life.

As the first nutriment which nature furnishes is a compound of animal and vegetable matters, so should it be for ever afterward. In youth, and especially during the first Septenniad, milk and farinaceous substances should form the major part of the diet with tender animal food once a day. As the teeth multiply, the proportions of the two kinds of sustenance ought gradually and progressively to vary.

2. CLOTHING.—Because we come naked into the world, it does not follow that we should remain so

Nature supplies animals with coats, because the parents of animals have no manufactories of linen and woollen. The dress with which nature clothes the young animal is nearly uniform over the whole body; but not so that which man, or rather woman, constructs for the infant. Some parts are covered five-fold—some left naked. In many of the most civilized countries of the world, the child is placed in "durance vile"—in bondage—or at least in bandage the moment it sees the light! This practice, which commences in ignorance, is continued by fashion, till it ends in disease, and entails misery and sufferings on the individual and the offspring, from generation to generation. But more of this hereafter.

If many of our disorders are produced through the agency of improper food or deleterious substances on the internal organs, so a great number of maladies are induced through the medium of atmospherick impressions and vicissitudes on the external surface of the body. These cannot be counteracted or rendered harmless by either very warm or very light clothing. The great antidote to alternations of climate consists in early and habitual exposure to transitions of temperature, drought, humidity, &c. This may be safely effected at all periods of life, from infancy to old age; and the practice, which is both easy and pleasant in operation, would save annually an immense waste of life, and a prodigious amount of sufferings in this country. It is simply the alternate application of warm and cold water (by immersion or sponging) during the first year or two to the WHOLE BODY, and afterward to the face, neck, and upper parts of the chest every morning. The application of cold water alone will not be sufficient. There must be the sudden and rapid succession of heat and cold—which I would term the CALIDO-FRIGID FORTIFIER, or prophylactick. This process not only imitates and obviates the atmospherick vicissitudes of our own climate, but is, in itself, salutary in any climate. The hot water excites the surface to which it is applied, and fills the capillary vessels with blood. The cold water braces the vessels thus distended, without repelling the fluid too forcibly towards the interiour, or producing a chill—since the heat and excitement of the surface secure us against a sudden retrocession.

It may be asked, "How does this protect us from the introduction of cold air into the lungs?" I answer, that Nature provides against this daily and hourly contingency. The temperature of the atmospherick air is brought to a par with that of the body while passing down through the air-tubes, and before it reaches the air-cells of the lungs. For one cold that is caught by inhaling cold air, one hundred colds are induced by the agency of cold and moisture on the surface of the body. CALIDO-FRIGID LAVATION or sponging, abovementioned, secures us effectually from faceaches, earaches, toothaches,[*] and headaches; besides rendering us insusceptible of colds, coughs—and, in no small number of instances—of CONSUMPTION itself. The practice is common in Russia and some other countries; and the principle is well understood by the profession in all countries; but the adoption of the practice is exceedingly limited in this country, where it would prove extremely salutary. Excepting in infancy, there is no occasion for the CALIDO-FRIGID application to the *whole body*, by means of immersion or sponging: at all periods of life afterward, the mere sponging of the upper parts of the body, already mentioned, (to which I would add the feet,) first with hot, and then immediately with cold water, will be quite sufficient to prevent a multitude of ills, a host of infirmities—and, let me add, a number of deformities to which flesh is heir, without this precaution.

As to clothing during the first Septenniad, I shall say little more than that it should be warm, light, and loose. It will be time enough—alas! too soon—to imitate the Egyptian mummy, when girls become belles, and boys beaux. I beg, for the first and second Septenniads at least, full liberty for the lungs to take air, the stomach food, and the limbs exercise, before they are "cribb'd, cabin'd, and confined," by those destructive operatives, the milliner, the tailor, and the bootmaker, *cum multis aliis*, who rank high, among the purveyors or jackalls to the doctor and the undertaker!

Much stress has been laid upon the use of flannel in all periods of our life. If the preservative against vicissitudes of climate to which I have alluded be employed, flannel will seldom be necessary, except where the constitution is very infirm, or the disposition to glandular affections prominent. At all events it should be very light, and worn outside of the linen, in this tender age.

3. EXERCISE.—During the first Septenniad, exercise may be left almost entirely to the impulses of Nature. The great modern errour is the prevention of bodily exercise by too early and prolonged culture of the mind. In the first years of life, exercise should be play, and play should be exercise. Towards the end of the first Septenniad, some degree of order or method may be introduced into playful exercise, because it will be essential to health in the second and third epochs. Even in this first epoch, exercise in the open air should be enjoined, as much as the season and other circumstances will permit. The windows of the nursery ought to be open during the greater part of the day, and nursery-maids and mistresses who cannot bear the air are very unfit for the physical education of children.

MORAL EDUCATION OF THE FIRST SEPTENNIAD.

The first seven years of life must not be given up entirely to the physical development of the constitution; though that is a most important part of the parent's duty. A great deal of moral culture may be effected in this period; but I apprehend that it ought to be very different in kind, in mode, and in degree, from what it is at present. During several years of this first Septenniad, the children of the lower, and even of the middle classes, are cooped up in a crowded and unwholesome schoolroom, for many hours in the day, to the great detriment o[illegible]eir health and morals, and with very little benefit to their intellecual faculties. Among the higher classes it is not so bad; yet there the children are too much drilled by tutor or governess, and by far too little exercised in body.

The principle which I advocate is this: that during the first and even during the second Septenniad, the amount of elementary learning *required* should be less, and the daily periods of study shorter:—that sport and exercise should be the regular and unfailing premium on *prompt and punctual* acquisition of the lessons prescribed—in short, that elementary education should be acquired "cito, tuté, ac jucundé"—instead of being a wearisome task, irksome to the mind, and injurious to the body.

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[*] The mouth should be rinsed with hot water and then immediately with cold, every morning throughout the year. If this were regularly done from infancy, the dentist might shut up shop.

But if I declare myself adverse to the system of precocious exercise of the intellect, I am an advocate for early moral culture of the mind. It is during the first years of our existence that the foundation of *habits* and *manners* is laid; and these will be good or bad afterward, according to their foundations. ORDER is truly said to be "Heaven's first law"—and so it should be the first injunction on childhood. The brightest talents are often rendered useless by the want of order and system in our amusements, studies, and avocations. The best temper or the purest intention will not compensate for want of regularity, industry, and punctuality. HABIT is the result of *impression*, rather than of *reflection;* and youth is the age for receiving impressions, rather than for exercising the judgment. ORDER may be instilled into the juvenile mind long before that mind is capable of perceiving the utility of the discipline; in the same way that the rules of grammar are learned before the application of these rules can be even imagined by the pupil. From long study, and, perhaps, a considerable knowledge of human nature, I would earnestly exhort parents, guardians and tutors, to enforce, with all their energy, the
tem of ORDER, REGULARITY, and PUN
the very earliest period of infancy up
discretion. Half, and more than hal
ies, crimes, and misfortunes, in after
utable to the misplaced indulgence o
ligence of our parents. "Spare the
the child," is a maxim that was founde
though it has been nearly exploded
philanthropists not deeply versed in
of man. The rod, in most cases, n
but, if order and obedience cannot
other means, the rod should be appli

The whole material world, and, a
judge, the whole universe, are subjec
erned by, certain laws of periodicity,
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of periodicity, and we should subjec
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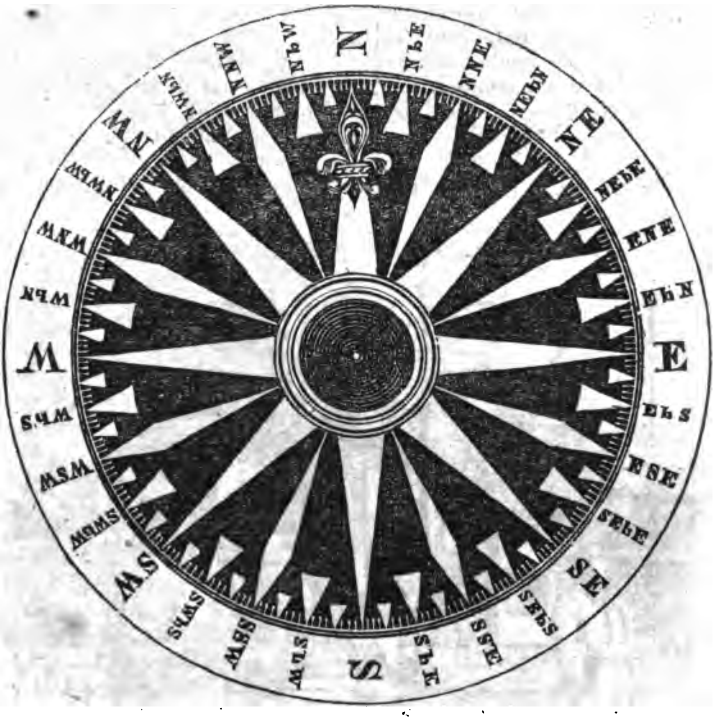

[The Mariner's Compass.]

THE MARINER'S COMPASS.

THE mariner's compass was invented about the year 1302. It had been ascertained that a fossil, a species of iron ore, denominated the loadstone, had the property of attracting iron, a
the same property to rods of i
sessed the still more remarkab
neously pointing north and s

suspended, and of giving a polarity to a rod or needle of iron, so that, when suspended on a pivot, and nicely balanced, so as to turn easily, one end of it would always point to the north pole, and the other to the south pole. This tendency of the magnetick needle is called its polarity. Having a compass, fitted up with such a needle, the navigator is always able to tell which direction is north, and what course he is sailing, in the darkest night, as well as in daylight. A mass of iron in the immediate vicinity of the needle, would draw it from its natural position, and prevent it from always pointing to the north, and should therefore, not be suffered to remain in such a situation.

The mariner's compass consists of a card or fly, on which the points of the compass are marked, to which the needle is attached in the direction of the north and south points, nicely balanced on a pivot in the centre of a circular box, so as to turn freely. The box is covered with glass, to protect the needle from accident; and is so hung as to maintain a uniformly horizontal position, whatever may be the rolling of the vessel.

The card of which the foregoing diagram is an example, is divided into thirty-two points of the compass, the names of which are signified by the initial letters in the margin, as, N. for north; N. b. E. for north by east; the small b. signifying by, &c. The naming of these points of compass in their order, beginning at north, and proceeding toward the east, and so on round the card to north again, and returning in a reversed order, is called by sailors, *boxing the compass;* and to be able to do it, is not only useful to seamen, but to children, who have occasion to use maps. They cannot tell, accurately, what direction one place is from another, unless they are familiarly acquainted with the points of the compass The four points, north, south, east, and west, are called cardinal points. The card is thus divided into four equal parts. From N. to E. are eight points: from S. to E. are eight points: from N. to W., and from S. to W., are each eight points. Next to N., S., E., and W., the points N. W., S. W., N. E., and S. E., are the principal.

MANNERS OF THE CHINESE.

The Chinese are a very singular and peculiar people. They are of a common height, and their complexion is a clear brown. They dress themselves in long robes with wide sleeves, and flowing silk girdles. Furs are every where seen among them in winter, varying in quality from sheepskin to ermine.

The Chinese wear a small, funnel-shaped hat, which varies with the rank of the wearer, and is mounted with a large button of coral, crystal, or gold. The materials of which this button is made, and its colour, mark the distinction of the individual. The general dress is simple and uniform. The only article which distinguishes the emperour himself from his courtiers, is a large pearl with which his head is adorned.

Some of the principal officers among the Chinese are called mandarins. The power of the mandarin is very great. On entering a city, he can order any person, whom he chooses to have arrested, to be put to death, and no one can venture to defend him. The mandarin is preceded by a hundred executioners, who, with a sort of yell, announce his approach. Should any one forget to retire to the side of a wall, he is severely whipped. The mandarin himself however, is not secure from punishment: for the slightest fault, the emperour will order him a sound beating.

The government of China is very despotick. The emperour is styled the sacred son of heaven, sole ruler of the earth, and great father of his people. Offerings are made to his image, and to his throne. His person is adored. When he goes abroad, all the Chinese are obliged to shut themselves up in

[Chinese.]

their houses. Whoever is found in his way is exposed to instant death, unless he turns his back, or lies flat with his face on the ground.. All the shops by which the emperour is to pass must be shut, and this prince never goes out without being preceded by two thousand officers carrying chains, axes, and various other instruments of cruelty.

The shoes of a Chinese lady are about four inches in length, and two in breadth. In infancy the feet are so closely bound and confined, that they cease to grow. Owing to this barbarous practice, it is often with difficulty that a Chinese female manages to walk.

The manner of building in China, is like that of no other nation. The houses have a light and flimsy appearance. They are generally of wood, and of but one story in height. The whole building is surrounded by a wall six or seven feet high.

The Chinese are not remarkable for their honour or regard for truth. Little dependance can be placed upon their word; and they will often cheat you, if they can find a chance. Over some of the shops may be seen the following words :—"*They do not cheat here*"—a piece of intelligence, for which the purchaser cannot be too grateful.

The Chinese laws are very severe with respect to the obedience of a child towards his parent. They give to the parents too much authority to leave space for affection. The parents have the right to destroy or mutilate their children, thousands of whom are yearly exposed to perish in the rivers. A father, during his life, has an unlimited command over his son, who is liable for all the paternal debts, but those contracted by gaming.

The discovery of the art of making paper from straw is of very ancient date in China. Straw, and even the bark of trees, and various plants and shrubs, are employed in the paper manufactories of China, where sheets are prepared of such dimensions, that a single one may be had to cover the side of a moderate-sized room. Many old persons and children, earn a livelihood by washing the ink from paper already written over, which is manufactured into new sheets: and so economical are the Chinese, that they separate the old ink from the water for future use.

The inventions of printing and gunpowder, were known in China long before they were known in Europe, though improvement stopped with the mere invention. A knowledge of the compass is also said to have been general, some years before its discovery in Europe.

ANECDOTE OF A FRENCHMAN WHO DWELT AMONG THE INDIANS.

PHILIP DE COCQ, who was born in a little village of Pitou, went to Canada in his infancy, served [illegible] as a soldier, at the age of twenty years, during the war of 1754, and after the battle of Quebec, retired to the country of the Five Nations, where, having married an Indian woman, he renounced the customs of his native land to adopt the manners of the savages. When I was travelling through the wilds of America, I was not a little surprised to hear that I had a countryman established as a resident, at some distance in the woods. I visited him with

eagerness, and found him e
stakes at the door of his h
wards me, which was col
his work; but the moment I
he started at the recollec
the big tear stood in his e
accents suddenly roused in
all the sensations of his Inf
regret the pleasures of our
ther we advance into life, t
becomes the recollection
one of our days supplies a
son. Philip entreated me t
I followed him. He had
expressing what he meant.
gain the ancient ideas of ci
ed him most closely. For
tunity of observing that the
ative things absolutely effac
that of any superfluity bein
noying others without an
I did not choose to put my
some hours of conversation
sufficiency of words and id
him: "Philip, are you hap
first how to reply.—"Happ
"happy! Yes; but happy on
age."—"And how do you
—He laughed—"I unders
"You think such a question
But should you not like to
of living, and return to your
try! France! If I were n
see it again."—"And you w
added I.—The motion of
my question sufficiently. "
continued I, "to become w
—"I don't know," said he,
pression put an end to m
I remained two days with P
him, and never saw him sw
from the assertion he had
from the conflict of social p
in the language of the savag
calm as the field of battle,
smoked together the *calume*

THE MAHRAT

THE engraving on the o
a Hindoo warriour by the n
dia. His father, who was
Mahratta, died about the y
few years afterward, succe
however, he had been muc
and had received a wound i
deprived him of the use of i

The countenance of this
of good sense, and good hu
was dark, and his person i
His habits were simple, his
though sometimes coarse a
beloved by those who depe
times liberal, especially to
however, he was penurious
money as to conquer prov

[Mahadajee Scindia.]

and keep accounts, which is not common among the Mahrattas. His disposition was not cruel, except when under the influence of anger, or a desire for revenge;—then he was cruel, and sometimes terrible.

It is much to his credit, however, that, in a country where warriours are not expected to be very scrupulous in their conduct, he was generally very humane; and though much of his life was spent in making conquests, he caused but little bloodshed. When he had gained a territory, he was wise and skilful to keep it; and what he once gained, he seldom lost. There was a time when he was one of the bravest, most powerful, and most successful princes in all India; and he was feared very much both by his fellow-countrymen, and by his British foes.

But, alas! he had his failings; and great failings they were too. He was so fond of the are[illegible] and betel-nut, and so lazy when not employed in war, that he kept a person constantly near him, to supply him with that luxury. This person's whole employment was to put the betel into his mouth, when he wanted a fresh supply. He also kept a Bramin, whose daily business it was to put the marks of his caste upon his nose and forehead. It consists of one circular spot between two lines. The marks are made with a pigment of yellow ochre and oil, which is washed off, and renewed every morning.

Great, therefore, as Mahadajee was in war, and in the art of governing others, he could not govern himself. He indulged to excess in betel; which probably shortened his life, for though he possessed a frame that might have lasted longer, he died, worn out, in 1794.

INDIANA.—It is a remarkable fact, that the farmers in fifty-eight counties in Indiana, can transport their productions from their own doors by water, in flat boats to market. Sixteen are bounded or in[illegible]sected by the Wabash—ten by the north branch of White river—twenty by the south and its forks—fourteen by the Ohio, and its little tributaries—five by Lake Michigan and St. Joseph's, and others by other branches and creeks. From all parts of the state, farmers and mechanicks can prepare their freight, and in the winter season float off to New Orleans or other markets, and return in season for another year's labour.

INDIAN ATTACK UPON WHEELING, IN 1777.

AT this time the principal fortifications of the Western country, if even they might well be termed such, were the forts at Wheeling, Redstone, Point Pleasant, and Fort Pitt, all in Virginia. The three latter were manned by regular state garrisons, but not in such numbers as to permit detachments of any force; the former, though supplied with ammunition by the state, was otherwise left to the resources of the settlers. In addition to these garrisons, many blockhouses or stations were scattered through the country, as far as Boonsborough and Harrodsburgh, in the *county* of Kentucky. Often these forts were resorted to, in periods of alarm alone; while the families would risk much to enjoy independence and privacy on their farms. The confinement of the crowded stations was so perpetually annoying, that many preferred to hazard their lives rather than endure their constant vexations.

Among the disastrous visitations of the savages, so common to the times, the attack upon Wheeling in the fall of 1777, is marked by more than usual sufferings.

In August, Gen. Hand, commanding for Virginia, at Fort Pitt, was informed by some friendly Indians from the Moravian towns on the Muskingum, that a large body of warriours, too formidable to be opposed in open battle, had arrived at their towns, on a war party against the Americans. Favonred by this friendly warning, the inhabitants on the Ohio generally repaired to their block houses; or withdrew to the interiour parts of Virginia, more remote from such barbarous dangers. Wheeling had most rapidly gathered a flourishing settlement of twenty or thirty houses, under the protection of its fort and the energy of the Zanes. Relying upon the scouts, who were constantly kept abroad, and the power of retiring into the fort, whenever danger should press them, the inhabitants of this place put off *their* retreat into their fortifications, until the enemy appeared in the midst of them.

On the night of the first of September, 1777, Capt. Ogal returned with twelve men, who had been on a scouting party, and brought information that no enemy was upon the border; but, as if to mock the most prudent precautions of our countrymen, a body of three hundred and eighty-nine painted warriours burst that night into the settlement, headed by the degenerate Simon Girty.[*] Seeing several lights in the fort, the enemy, with their characteristick wariness, thought they could effect more, by lying in wait for the whites, than by an open attack upon them. The Indians then arranged themselves in two lines, at some distance apart, extending from the river across the point between it and the creek, below the present town. This point seems to have been covered with Indian corn, itself in that soil a most luxuriant crop, and well fitted for concealing an enemy. In the middle of the field, between the ambushed lines, near a road which led from the fort into the field, six Indians were placed as a decoy.

The scheme was too successful, a
ambuscades have ever been, in the co
ans with their civilized antagonists;
the disgrace of the tacticks employ
children of the forest. Indeed, the f
concealment possessed by the Indian
by their unrivalled knowledge of the
bids the arts of civilization defiance, w
daring and powerful reconnoitring.

On the morning of the second, quite
went into the field for some horses; p
line next to the town, and came in sig
guard. The white men now set ou
when one was immediately shot do
was allowed to escape as bait for th
bring on a pursuit. This was instan
Captain Mason, at the head of four
posing there were but six Indians, a
fugitive. The party took the rout
them, until they likewise had got enc
the fatal lines, which they perceived
tempting an escape, the men were i
pieces with tomahawks. The capta
geant attempted to ascend the hill to
followed by the enemy. The serge
verely wounded as to compel him to
mit to his fate; and as his captain w
a crippled condition, the wounded ma
his gun. Mason could flee but littl
after killing one of his pursuers, who
him close, he pushed another down t
ground, while the uplifted tomahawk
The captain concealed himself by the
log, until the Indians abandoned th
screams of Mason's men brought Cap
twelve more men to their assistan
warned by their unfortunate fate, th
led by some fascination, fell into th
with their unhappy predecessors.
alone happened to be left out of the
that closed upon his men and destr
threw himself into a bunch of briers,
ped the fate that befell his followers.
ty-six men, in a thin population, wl
were less numerous than red ones,
caped with their lives, and of these
verely wounded.

While this tragedy was performin
town, the inhabitants were removing
their valuables into Wheeling fort.
begun about daylight, and the ene
full force before the fort by sunrise,
of the fort were shut. The hurry,
confusion of such a scene, can scar
ed, and certainly not described.

Before the assault was made, the
addressed the people of the fort fro
one of the houses in the town, in
them to accept the protection of t
expatiated upon the number and fe
dian force, and read the proclamati
ilton of Detroit, offering safety to
abandon the *rebellious* colonies and
On the other hand, if they persiste
acy and fired one gun in their defe
ened the inhabitants with all the ex
age cruelty. He gave the garrisc
to deliberate upon his proposals.

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[*] This man and his brother, are represented to have joined the Indians and British, owing to a disgust at being passed over in some military prowess in Pennsylvania. The information is not very authentick as to the causes of the abandonment of his native countrymen; but the ferocity of Simon, his excesses, beyond even Indian barbarity, were signalized from Wheeling to the Blue Licks.

was, it was more than this gallant body of men required, though it was but thirty-three in number, opposed to hundreds of Indians. Col. Zane replied to the summons in the following terms:—"We have consulted our wives and children, and they are all resolved to perish sooner than place themselves under the protection of a savage army with you at its head; or to abjure the cause of liberty and of the colonies."

Girty still persisted in urging his insidious proposals and diabolical threats, until a shot drove him from his parleying station. The assault now began in deep and dreadful earnest, and raged with every possible violence on both sides, for three-and-twenty hours. This was no struggle for the mere honours of war; it was a contest for life and safety from savage torments; it was a battle for the scalps and lives of women and children. Thus nerved, who that were men, would not have fought? The brave garrison did its duty against their barbarian foes; till despairing of capturing the fort, and apprehensive of a reinforcement, the Indians retired; burning all the houses of the town, and slaughtering all the cattle, hogs, and horses, they could find about the fort. By these hostilities, the people were left in a condition little less distressful, than if they had fallen victims to the Indians. Life and hope made the only difference; for their provisions, their clothing and their bedding, had generally perished in the ashes of their houses. So hurried had been the retreat, that many escaped in the apparel of the night alone. It was indeed a desolate scene; yet well and nobly endured for the bustling commerce and ingenious arts, which have raised the modern town of Wheeling to its present high prosperity in western Virginia.

The failure of this siege is to be added to the numerous instances in the history of the western country, of the superiority of a slight fortification of logs to all the military arts of the Indians. It almost defies belief, that this superiority should be so decisive, as to enable thirty odd determined men, under its cover, successfully to defy a numerical difference of more than three hundred and fifty choice and exasperated warriours.

Shortly after the beginning of the siege, information was conveyed to some neighbouring forts of the attack; and exertions were immediately made among the generous and gallant spirits of the times, to relieve the beleaguered Wheeling fort. Open battle was not within the power of the sparse and scanty population; but Col. Andrew Swearingen set off with fourteen men, (to the no little dread of those he left behind, for their own safety, as well as that of the bold detachment,) for the purpose of throwing himself into the besieged place. The party descended the river in a large canoe, paddling all night; but owing to a heavy fog, they were much impeded on the way. At length, fearing they might pass the town in the night, they suffered the canoe to float down the stream, till they descried the light of the burning houses of Wheeling. They now apprehended that the fort, as well as the town, might have been destroyed. To ascertain the condition of things, Col. Swearingen, Capt. Beldenback, and William Bashears, landed above the fort, and safely reached it. Still apprehending that the enemy might be lying in wait, a view was cautiously taken in a circuitous manner, and finding that the enemy had in reality departed, the officers rejoined their companions at the river, and the whole repaired to the fort. But after such destructive surprises as the garrison had experienced, it required the best concerted means to renonnoitre the whole ground. For this purpose, two active men were directed to go out of the fort with apparent carelessness, but real caution, and examine the cornfield adjacent to the pallisades of the fort. Finding no appearance of an enemy remaining, Col. Zane, with a party of twenty men, completed the reconnoisance. In a short time, Maj McCullough arrived with a reinforcement of forty-five men; the united troops then ventured to survey the field of slaughter and destruction. Here there were the bodies of the two white parties, cut into pieces with the tomahawk; cattle, horses, and hogs, lay weltering about; and lastly, the habitations of the people were a pile of ruins. It was long indeed, before the settlement recovered from the devastation of this siege. A vivid and natural picture of such desolation is drawn by our gifted Cooper, in the description of the fort of Heathcote in the valley of the Wish-ton-wish.

Mann Butler

ANCIENT MEXICAN COTTON MANUFACTURE.

The cotton manufacture was found existing in considerable perfection in America, in the discovery of that continent by the Spaniards. Cotton formed the principal article of clothing among the Mexicans, as they had neither wool, hemp, nor silk; nor did they use the flax which they possessed for purposes of clothing; and their only materials for making cloth, besides cotton, were feathers, the wool of rabbits and hares, (known in commerce as coney's wool,) and the fibrous plant called the *maguei*. We are informed by the Abbe Clavigero, that "of cotton, the Mexicans made large webs, and as delicate and fine as those of Holland, which were with much reason highly esteemed in Europe. They wove their cloths in different figures and colours, representing different animals and flowers. Of feathers interwoven with cotton they made mantles and bed-curtains, carpets, and other things, not less great than beautiful. With cotton also they interwove the finest hair of the belly of rabbits and hares, after having made and spun it into thread; of this they made most beautiful cloths, and in particular winter waistcoats for the lords." Among the presents sent by Cortes, the conqueror of Mexico, to Charles V., were "cotton mantles, some all white, others mixed with white and black, or red, green, yellow, and blue; waistcoats, handherchiefs, counterpanes, tapestries, and carpets of cotton; and the colours of the cotton were extremely fine," as the Mexicans had both indigo and cochineal among their native dies. They also used cotton in making a species of paper; one of their kinds of money consisted in small cloths and cotton; and their warriours wore cuirases, of cotton, covering the body from the neck to the waist.

Baine's History of the Cotton Manufactures.

The skins of sheep and goats were very early used instead of paper. The finest material of this sort is called vellum.

MISCELLANY.

ARTIFICIAL CRYSTALS AND MINERALS.

At the meeting of the British association, Mr. Cross of Bloomfield, Somerset, stated, that he had latterly been occupied in improvements in the voltaick power, by which he had succeeded in keeping it in full force for twelve months by water alone, rejecting acids entirely. Mr. Cross proceeded to state, that he had obtained water from a fine crystallized cave at Holway, and by the action of the voltaick battery had succeeded in producing from that water, in the course of ten days, numerous rhomboidal crystals, resembling those of the cave; in order to ascertain if light had any influence in the process, he tried it again in a dark cellar, and produced similar crystals in six days, with one fourth of the voltaick power. He had repeated the experiments a hundred times, and always with the same results. He was fully convinced that it was possible to make even diamonds, and that at no distant period every kind of mineral would be formed by the ingenuity of man. By a variation of his experiments he had obtained gray and blue carbonate of copper, phosphate of soda, and twenty or thirty other specimens.

IMPORTANT CHYMICAL DISCOVERY.

We are, in France, on the eve of a new kind of revolution, which will, without doubt, make the tour of the world. Chymists have just discovered a process by which they can remove writing from any paper without leaving the slightest mark which might lead to the suspicion of fraud. No ink can resist the power of this composition, and no kind of paper can retain the character it bears. That the government might be satisfied of the dangerous nature of this discovery, a chymist went to the prefecture of police, and requested a passport for a stranger, which was immediately granted. The next day the same chymist went to the house of the prefecture himself, and showed him a passport in blank, signed with his own hand. "It was only yesterday," said he, "that this passport was given me at your office; and if this is the way the police conducts, no wonder that Don Carlos could traverse from one end of France to the other, in order to reach Spain!" The prefect, astonished, sent for all the agents of his office. All denied that they ever delivered this unfortunate passport; but they finally agreed that it was certainly the signature of the prefect which it bore, the particular kind of paper which was used in the office of police, and the royal stamp with which it was impressed.

It had already become a subject of legal inquiry, of deposition from office, &c., when the chymist appeased the anger of the prefect and the fears of his agents, by explaining the means which he had used to remove the writing. One of the first bankers of the capital maintained that the act of washing alone, by means of which a written paper should be returned to its virgin whiteness, would leave some marks by which it could be detected. The same chymist, who was in epistolary correspondence with this banker, took a letter which he had formerly received from him, removed the writing by this composition, except the signature, wrote above it an acceptance for a hundred francs
This acceptance was presented
paid it immediately, and the ba
that he himself should have tak
treasury has suffered by this
the sale of stamped paper is no
before, for any one may restor
wash leaving the stamp, &c., o
no longer of any use. Severa
occupied in preparing an ink w
indelible; others in making a p
proof against this terrible disco
time government has changed i
one bears the cypher of the y
renewed on the first of January

CAPITAL PUNISH

Among the evidences occas
rope is advancing in civilizat
fact that publick executions are
than they were some years si
Prussia the number of capi
been greatly diminished; and
been a similar diminution.
Wales; and, as far as our
same is true of almost every d
following is an account of t
persons executed at different
1837:—

From 1805 to 1811	Avera
1812 to 1818	-
1819 to 1825	-
1826 to 1832	-
1831 to 1833	-
1834 to 1837	-

The following is the state
victions in France and Engl
years, for simple larcenies,

IN FRANCE.	
Committals	15,020
Convictions	11,568
Imprisoned for 1 year and upward	3,646
Under 1 year	6,861
Fined	771
Infants sent to a house of correction	290

POTATOES

The Prussians appear
their fondness for potato
ous modes of preparing
traveller states that he
served in six different fo
them; the soup thickene
potato salad, and potato
cheese, which, besides
will keep some years.

LITERARY NOTICES.

A History of New York, for Schools. By William Dunlap. In two volumes, 18 mo. Collins, Keese, & Co., 1837. Hardly a more acceptable service of the kind, could have been rendered the rising youth of this American republick, than the publication of these two manageable volumes, by this well-known and judicious author. Among the things most to be desired for the literary wants of the present generation, is a series of books of a character and object such as the volume now before us. We have long been accustomed to the pabulum of instruction from English and other foreign sources, even when the topicks upon which we looked for information, concerned our own immediate historical and physical resources, and our youth have too generally been permitted to grow up satisfied with the scanty and erroneous knowledge of crude, and prejudiced, and ignorant writers, whose lucubrations have for the most part, proved wholly inadequate to the end proposed, and whose information when correct, is saturated with prejudices and speculations of a most detrimental tendency.

The work before us is wholly free from objections of this sort: the excellent author evinces throughout a close and severe examination of historical data, and occurences, and while he betrays a proper and wholesome predilection for his native country and its government, is remarkably free from prejudices, and assumes the character of a faithful and impartial writer. His materials are drawn from the most authentick records, and in many instances we are furnished with novel and interesting particulars now for the first time made publick. The author for many of his details is indebted we believe to the archives of the New York Historical Society, and in stating this circumstance we feel that we do no more than justice to that valuable institution whose labours for years, have been steadily directed to the accumulation of matters which must prove of singular utility to every one who contemplates becoming the historian of the American people. We are informed that Mr. Dunlap's work is rapidly making its way into the publick schools, and seminaries of general instruction. we rejoice at so wholesome a measure; which cannot fail to prove of lasting utility to the generation now coming onward.

The Madisonian.—Ere this number reaches them, most of our readers will have heard of the "Madisonian" a new political paper recently issued at Washington, D. C. by a gentleman whose name and writings are familiar to most of our subscribers. The editor and proprietor Thomas Allen, Esq., was formerly editor of the Family Magazine, he now enters the arena of politicks.

If a thorough classical education, followed by several years of close application to the study and practice of law, united to talents of no common order, gentlemanly address and deportment—be qualifications which a political editor *ought* to possess. Mr. Allen will hold an elevated situation in the fraternity to which he is attached.

Attila. By the author of the Gipsey, One in a Thousand, &c. New York, published by Harper and Brothers, 82 Cliff street. It is truly refreshing in the present dearth of publications to be treated with a work from the pen of the accomplished James, than whom no one is more popular both in this country and abroad. We like Attila as well as any of Mr. James's books, and cordially recommend it to our readers.

The Eye, with reference to natural theology. By William Wallace, M. D. Oculist. New York, Wiley & Long. This unpretending little volume conveys a better description of the eye than is to be found in any other book, and although many books have been written upon this important organ, yet it was reserved for Dr. W. to give the best account of the formation of the retina. Dr. Wallace deserves to be encouraged.

Peter Parley's Book of the United States, Geographical, Political and Historical, with a comparative view of other countries. Boston, published by C. J. Hendee, 1837. Another of the capital series of books so well adapted for the instruction of youth. Truly, Peter Parley is always conjuring up some new mode of conveying information and amusement to the minds of the young. The present, one of his most successful efforts, is rendered more attractive by numerous cuts.

Live and let live. By the author of the poor rich man, is the last book issued from the press of the Harpers. This is truly a very valuable, and a most important book to be read by a young housekeeper, or in fact by any one who is called upon to exercise authority over others. The moral which it conveys is excellent.

The Harcourts, or Stories from Real Life, published by S. Colman, 114 Fulton street N. Y., and Weeks, Jordan & Co. Boston, is another of those useful and interesting publications belonging to the series of the "Three Experiments." Twenty-five cents can hardly be better employed, than in purchasing such a book as this.

Travels in Egypt, Palestine and the Holy Land, by a young American, 2 vols. New York, Harper & Brothers, 1837.

These are two the most interesting volumes the present book-prolifick age has brought forth. We have read them again and again, and marked more extracts for the Family Magazine than would make up a whole number. We can at this time merely notice the publication; but shall endeavour to give some extracts in a future No. The Christian reader will be delighted with the descriptions given by Mr. Stephens of many of the places mentioned in scripture. The visit to the tomb of Aaron, on Mount Hor; and the journey through the land of Edom; to the Dead Sea, etc. etc., are exceedingly interesting

MRS. MERRILL, KILLING THE INDIANS.—p. 163

THE WESTERN MOTHERS.

Nor was it man alone who boldly adventured into the untrodden forests of the west, to found new states and cities. Woman, gentle and confiding woman, was present, to share the dangers and perils of the lords of creation. The legends of the west, the tales of chivalry and adventure, which are intimately connected with the formation and progress of those members of the confederacy which at some future period are destined to exercise an immense influence on the fortunes of our country, often present woman as taking an active part in the perils of Indian warfare; and it is by no means unusual, for the traveller in wandering over the western frontier, to hear a thrilling narrative of a devoted wife, standing up at her husband's side, and perilling her life with a generous devotion which none but woman can know, and rendering to the beloved of her bosom, assistance which was often of vital importance to him.

M'Clung in his interesting Sketches of Western Adventure has recorded among many others of a kindred character, the following sketch, an illustration of which, we have selected as the frontispiece for the present number of the Family Magazine.

"During the summer, the house of Mr. John Merril, of Nelson county, Ky., was attacked by the Indians, and defended with singular address and good fortune. Merril was alarmed by the barking of a dog about midnight, and upon opening the door in order to ascertain the cause of the disturbance, he received the fire of six or seven Indians, by which his arm and thigh were both broken. He instantly sunk upon the floor and called upon his wife to close the door. This had scarcely been done, when it was violently assailed by the tomahawks of the enemy, and a large breach soon effected. Mrs. Merril, however, being a perfect Amazon both in strength and courage, guarded it with an axe, and successively killed or badly wounded four of the enemy as they attempted to force their way into the cabin. The Indians then ascended the roof and attempted to enter by way of the chimney, but here, again, they were met by the same determined enemy. Mrs. Merril seized the only feather bed, which the cabin afforded, and hastily ripping it open, poured its contents upon the fire. A furious blaze and stifling smoke instantly ascended the chimney, and quickly brought down two of the enemy, who lay for a few moments at the mercy of the lady. Seizing the axe, she quickly despatched them, and was instantly afterward summoned to the door, where the only remaining savage now appeared, endeavouring to effect an entrance while she was engaged at the chimney. He soon received a gash in the cheek, which compelled him with a loud yell to relinquish his purpose. He returned to Chilicothe, where, from the report of a prisoner, he gave an exaggerated account of the fierceness, strength and courage of the long-knife squaw!"

The following is another thrilling story from M'Clung's book.

"On the night of the eleventh of April, 1787, the house of a widow, in Bourbon county, became the scene of an adventure, which we think deserves to be related. She occupied what is generally called a double cabin, in a lonely part of the county, one
room of which was tenanted
together with two grown sons
ter, at that time suckling an
was occupied by two unmarr
teen to twenty years of age,
girl not more than half g
eleven o'clock at night. (
daughters was still busily en
the other members of the fan
of one of the sons, had retire
toms of an alarming nature l
tion of the young man for an
of a decided character too
owls were heard in the adjoi
each other in rather an unus
ses, which were inclosed as
the house, were more than
by repeated snorting and ga
presence of some object o
man was often upon the p
brother, but was as often res
incurring ridicule and the r
that time an unpardonable b
of a Kentuckian. At len
heard in the yard, and qui
loud knocks at the door, acc
exclamation, "who keeps ho
glish. The young man, su
guage, that some benighted s
hastily arose, and was adva
bar which secured it, when
long lived upon the frontiers,
tected the Indian tone in the
instantly sprung out of bed, a
to admit them, declaring th
She instantly awakened her
young men seizing their gun
charged, prepared to repel
dians finding it impossible to
sumed characters, began to t
great violence, but a single
compelled them to shift the
posed point; and, unfortunat
door of the other cabin, whi
daughters. The rifles of th
brought to bear upon this p
several rails taken from the y
forced from its hinges and
the mercy of the savages.
cured, but the eldest defen
with a knife which she had
and stabbed one of the Indi
she was tomahawked. In t
girl, who had been overlook
eagerness to secure the othe
and might have effected he
advantage of the darkness
that the terrified little creatu
wringing her hands, and cr
were killed. The brothers,
without risking every thing
to the door and were prepa
assistance, when their moth
them and calmly declared
abandoned to its fate—that
the lives of all the rest with
to the little girl. Just then
scream, followed by a few

again silent. Presently the crackling of flames was heard, accompanied by a triumphant yell from the Indians, announcing that they had set fire to that division of the house which had been occupied by the daughters, and of which they held undisputed possession. The fire was quickly communicated to the rest of the building, and it became necessary to abandon it or perish in the flames. In the one case, there was a possibility that some might escape; in the other, their fate would be equally certain and terrible. The rapid approach of the flames cut short their momentary suspense. The door was thrown open, and the old lady, supported by her eldest son, attempted to cross the fence at one point, while her daughter carrying her child in her arms, and attended by the younger of the brothers, ran in a different direction. The blazing roof shed a light over the yard but little inferiour to that of day, and the savages were distinctly seen awaiting the approach of their victims. The old lady was permitted to reach the style unmolested, but in the act of crossing, received several balls in her breast and fell dead. Her son, providentially, remained unhurt, and by extraordinary agility, effected his escape. The other party succeeded also in reaching the fence unhurt, but in the act of crossing, were vigorously assailed by several Indians, who throwing down their guns, rushed upon them with their tomahawks. The young man defended his sister gallantly, firing upon the enemy as they approached, and then wielding the butt of his rifle with a fury that drew their whole attention upon himself, and gave his sister an opportunity of effecting her escape. He quickly fell, however, under the tomahawk of his enemies, and was found at daylight, scalped and mangled in a shocking manner. Of the whole family, consisting of eight persons, when the attack commenced, only three escaped. Four were killed upon the spot, and one (the second daughter) carried off as a prisoner.

"The neighbourhood was quickly alarmed, and by daylight, about thirty men were assembled under the command of Colonel Edwards. A light snow had fallen during the latter part of the night, and the Indian trail could be pursued at a gallop. It led directly into the mountainous country bordering upon Licking, and afforded evidences of great hurry and precipitation on the part of the fugitives. Unfortunately, a hound had been permitted to accompany the whites, and as the trail became fresh and the scent warm, she followed it with eagerness, baying loudly, and giving the alarm to the Indians. The consequences of this imprudence were soon displayed. The enemy finding the pursuit keen, and perceiving that the strength of the prisoner began to fail, instantly sunk their tomahawks in her head and left her, still warm and bleeding upon the snow. As the whites came up, she retained strength enough to wave her hand in token of recognition, and appeared desirous of giving them some information, with regard to the enemy, but her strength was too far gone. Her brother sprung from his horse and knelt by her side, endeavouring to stop the effusion of blood, but in vain. She gave him her hand, muttered some inarticulate words, and expired within two minutes after the arrival of the party. The pursuit was renewed with additional ardour, and in twenty minutes the enemy was within view. They had taken possession of a steep narrow ridge and seemed desirous of magnifying their numbers in the eyes of the whites, as they ran rapidly from tree to tree, and maintained a steady yell in their most appalling tones. The pursuers, however, were too experienced to be deceived by so common an artifice, and being satisfied that the number of the enemy must be inferiour to their own, they dismounted, tied their horses, and flanking out in such a manner as to inclose the enemy, ascended the ridge as rapidly as was consistent with a due regard to the shelter of their persons. The firing quickly commenced, and now for the first time they discovered that only two Indians were opposed to them. They had voluntarily sacrificed themselves for the safety of the main body, and had succeeded in delaying pursuit until their friends could reach the mountains. One of them was instantly shot dead, and the other was badly wounded, as was evident from the blood upon his blanket, as well as that which filled his tracks in the snow for a considerable distance. The pursuit was recommenced, and urged keenly until night, when the trail entered a running stream and was lost. On the following morning the snow had melted, and every trace of the enemy was obliterated. This affair must be regarded as highly honourable to the skill, address, and activity of the Indians, and the self-devotion of the rear-guard, is a lively instance of that magnanimity of which they are at times capable, and which is more remarkable in them, from the extreme caution, and tender regard for their own lives, which usually distinguishes their warriours".

NATURAL HISTORY.

THE ARABIAN CAMEL.

Of the group of animals figured in the cut accompanying this article, the Syrian ox and the camel, are the most useful and important. The Syrian ox takes the place in the eastern countries of our common ox. The camel family is extensive and embraces the camel, dromedary, lama, guanaco and alpaca. Of these the Arabian camel may be considered as the camel *par excellence;* as it is the one which is best known and employed on the most difficult, and therefore the most important journeys. To the Arab in the desert, especially those parts of it in which neither sheep nor goats can be kept, the camel is an exceedingly valuable animal; and in this respect approaches nearer to the ox, where kept for draught and burden, as well as for food, than perhaps any other animal. The flesh of the camel is eaten; and the milk is applied to all the common domestick purposes. Their hair is manufactured into clothing, and also covering for tents. The hide, which is very thick and strong, is used for making sandals, saddles, pitchers, shields and various other articles. The owner, with his family, and all their little appointments, are carried from place to place on the backs of the camels. When the camel kneels down for repose during the night, his side forms a pillow; and when the sand

[The Syrian Ox, Camel, and Ass.]

drives before the storm in the desert, the rider takes shelter in the lee of the kneeling camel. Upon occasion, the camels are sometimes ranged round the encampment, forming both a shelter, and at least a temporary means of defence in cases of attack during the night; and those countries which are separated from each other by wide extents of desert, could have no communication with each other but by means of the camel. The camel and the desert thus appear to be made for each other; and though the appellation of "the Ship of the Desert" no doubt partakes of little of the high hyperbole of eastern speech, yet that animal is the only ship by means of which the desert can be navigated either with certainty or with safety.

An Arabian camel can carry a load of between seven and eight hundred pounds, and travel with it at the rate of about two miles and a half in the hour. When less heavily laden it can travel faster, though not above three miles in the hour; and in the deserts it is not customary to load the animals very heavily, or drive them more than about eight hours in the day. Though the eye of the camel is heavy, his senses, especially that of smelling, are very acute: and though there is some trouble as well as some skill necessary in breaking a young camel, yet when properly broken they are docile; with proper treatment they last much longer than the horse, being serviceable to the age of forty or forty-five years; but in India, where they are heavily laden, and not so well treated as in the countries to the westward, they do not last above half that time.

Camels have been partially introduced into some of the warmer parts of the south of Europe; but
they are not properly at home ar
surfaces of dry sand or mud; o
feet get beaten, on rocks they g
kinds of surfaces the planting
them violently, and they run son
the joints of their legs; their
and also the convex form of th
render a surface which yields
necessary to their walking with
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grees of blood" among camels. Those which are used in common caravan travelling, with heavy loads, and at a slow rate, bear nearly the same relation to the smaller, lighter, and fleeter breeds, which are used in reconnoitering or on swift journeys, that our heavy dray and cart-horses bear to roadsters, hunters, and racers. It is to this small and fleet breed that the name dromedary, or *mahairy*, properly applies. By means of these, no doubt with relays at the different stages, a journey at the rate of more than four miles an hour may be kept up night and day for several days. It has sometimes been alleged that this difference of speed in different individuals should be considered as arising from a difference of species, and there have not been wanting attempts to show that these different species originated in different parts of the country, but there is little reason to suppose that either the one or the other of those suppositions have the slightest foundation in truth; though there is no doubt that camels, like all other animals, are affected by differences of climate, pasture, and treatment. And, as the swifter ones are said to be more in the hands of the wandering Bedouins than of those who have comparatively fixed abodes, it is highly probable that the farther into the desert, the camel is the fleeter, and the smaller in size. This accords with what is observed of animals in our own country; and as is the case with these, it seems to be in hardihood and power of endurance more than in absolutely greater speed, for a short time that the maharies are superiour to the larger camels which are employed to carry loads at slower rates and at shorter distances.

The Arabian camel is, in the largest breeds, about seven feet in height; but the smaller and swifter ones are lower. The legs are long and slender, and what are considered "clean made." It is very much drawn in at the flanks, but the abdomen is rather too large, and the length of the intestinal canal and size of the stomachs, rendered necessary by the coarse nature of the animal's food, require that it should be so. There is but one hump, which is nearly in the middle of the back, broad and rather flat in the upper part; and it does not waste so much in the rutting season as the hump of the Bactrian camel. Independently of the different breeds which are reared for different purposes in the domestick economy of those people who use camels, there are considerable differences arising from the characters of the countries in which they are bred. In this respect they follow the law of all domesticated animals which find their food in the fields; that is, the richer the pasture is the breed runs the larger, and the breed gradually diminishes as the pasture becomes bare and dry. So that if large camels are wanted in Arabia or in the African deserts, the breed has to be obtained, or kept up by periodical crossing, from Turkey; and on the other hand, if light and fleet camels are wanted in the richer places, they have to be obtained by means of the breeds of the deserts. Independently however of this, there appears to be some difference of size connected with difference of latitude, as they are smaller in proportion as they are bred in places nearer the equator. From this it has sometimes been argued that the Arabian camel is not a native of Arabia, but of Syria, and even the northern part of that country toward the mountains of Armenia; and that of the two species of camel, the one is a native of the country immediately to the south of those mountains which range from the Himalaya to the shores of the Archipelago, and that the other is a native of the northern slopes of the same mountains.

That this mountain-ridge is the natural boundary of the localities of the two species or varieties may readily be admitted, because the hair of the Bactrian camel follows the general law of that of all animals of Central Asia northward of the line of the Himalaya. Toward the winter it grows very long, as if to serve as a thatch against at least occasional snow-storms; and when summer sets in, this winter coat of long hair is shed, so that during the summer, which is very hot and dry in those places, as compared with the winter, the animal is nearly naked. In the Arabian camel, on the other hand, there is no such seasonal change in the hair. No doubt it is longer in winter than in summer, and the coat is annually changed as well as that of the other; but the change is gradual in comparison, and the difference in the winter and summer appearance of the animal is not nearly so great. In this respect, however, there is a considerable difference between the camels of the northern and the southern parts of their range, or more strictly speaking, between those that inhabit countries which are subject to periodical rain and drought, and those which inhabit where the climate is habitually dry, and with the exception of difference of heat (which is not very great,) the weather may be said to be nearly the same all the year round. This is very much the case on the borders of the western or rather the central deserts of Africa, and it is partially also the case in some of the northern parts of Arabia. These are the places where the smallest and fleetest camels are bred, and also where their hair is shortest and most uniform in length throughout the year.

There is thus a wonderful accommodation to climate in the camel, as well as in all the other ruminantia, which are so very serviceable to man in a domestick state; and from this we may infer that, in so far as its general health is concerned, the camel might in course of time be domesticated, and thrive in a domestick state, in any latitude, from Lapland to the equator. There is something very remarkable in this universal adaptation of those animals which are the most serviceable to the human race, so remarkable that it is impossible not to see that God has created those animals for a double purpose. First, for their general use in wild nature, in which they agree with all other natural productions; and secondly, in their peculiar use to man in all stages and degrees of civilization. And we may remark that the very same law holds good in the vegetable kingdom. All those plants which are more eminently necessary for human food can, with proper management, be grown in perfection over a vast range of surface. Wheat, which is probably (though the fact is one which cannot be ascertained with certainty) a native of Northern Africa, can be profitably reared in the north of Scotland; and the potato, which is originally from Central America, forms a large proportion of the vegetable food even of Northern Europe, and is much better there than in any part of that continent of which it is a native.

Animals and vegetables which are not serviceable to man, or of which the possession partakes more of the character of a luxury than that of a necessary life, do not so readily accommodate themselves to different climates; and in order to have them in places which are not native to them, a good deal of art must be practised, and a good deal of expense incurred. But though the valuable animals accommodate themselves to different climates, there is still one part of their organization which keeps them to that peculiar kind of surface on which food most nearly resembling that of their native places is to be found; and, as the camel is a native of very peculiar kinds of surface, the camel is a very remarkable instance of this. These animals use their feet only as organs of motion, and except in kicking or striking in their own defence, they use them for no other purpose; and, therefore, the structures of their feet keep them more to their proper localities than those of any other animals, as for instance, the buffalo to the swamp, the ox to the meadow, the sheep to the hillside, the goat to the rocks, and the camel to the desert. Therefore, though it is possible to rear any one of those animals over a very wide extent of latitude, there is still some one better fitted for every particular place than any of the others are; and thus, though nature has been exceedingly bountiful to man in the valuable qualities in those animals, the advantage is not given to him as an ignorant and indolent savage, but as a means of rational study and wholesome labour. Hence, every department of nature, as well as every difficulty and distress by which man is overtaken on his progress through life, impresses upon him the necessity of being intelligent and industrious—proclaims to him, in language not to be mistaken, that if he would avoid being wretched and miserable he must learn to know and to do, and continue steady in the practice of both, during the whole period of his life.

FIGS.

The annexed cut is an excellent representation of the leaves of the fig, an extensive genus of lofty trees only one species of which bears edible fruit. This is the one generally cultivated in hot-houses at the northern, and in the gardens of the southern parts of the United States. In the south of Europe figs are one of their most esteemed and valuable fruits, not only from their forming an article of diet in the season, but from their being an important article for exportation to other countries.

The fig-tree is remarkable for yielding, in its native country, two crops of ripe fruit in the course of twelve months. The young fruit which make their appearance in the autumn of one year, ripen in the beginning of summer in the next; and the fruit which show themselves in the spring, ripen in the following autumn. In this country the spring-produced fruit rarely or never ripen in the open air; but the autumn-fruit, if they escape the frosts of winter, ripen perfectly, as well on standards as on walls.

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[The Thorn.]

frequently remarked, that one and sometimes two or three grass-hoppers, and other insects are found impaled by a bird called the nine-killer.

Tradition relates that this bird has a practice of catching and sticking up nine grass-hoppers a day, which it does not devour, but places them in order to decoy the smaller birds which feed on insects, and thus render them his prey. But what is still more remarkable, each of these grass-hoppers is stuck up regularly and in the same position as when on the ground.

ARTS AND ARTISTS.

The cut opposite, represents the flight of Lot and his daughters, and is engraved from a celebrated picture by Guido Reni.

This memorable artist was born at Bologna in 1574, and when very young became the scholar of Denis Calvart, but he afterwards entered the school of the Caracci, being considered as the principal disciple of that celebrated seminary, with the exception of Domenichino. His masters, we are confidently told, were so jealous of his extraordinary talents and uncommon progress, that Lodovico attempted to keep down his aspiring genius, by setting Guercino against him as a rival; while Annibale, in the same ungenerous spirit, censured Albano for bringing Guido among them. Notwithstanding this, the young artist pursued his course with unremitting ardour; nor did he adopt the style of the Caracci, but examined for himself the several excellencies of other great painters, with the view of profiting by them all, and thus forming a manner of his own. He at one time appeared to imitate Passerotti, and at another Caravaggio; but he took care [illegible]void their defects, and whatever he found good to a[illegible] improved, both in expression and in either [illegible] colouring. The tender, the pathetick and devout, were the characters in which he peculiarly excelled, and are those which not only distinguish him from every other painter, but almost give him precedence of all. In expressing the different parts of the body, he had a remarkable peculiarity, for he usually designed the eyes of his figures large, the nostrils somewhat close, the mouth small, the toes rather too much joined, and without any great variety. His heads are accounted little inferiour to Raffaell's, either in correctness of design or engaging propriety of expression; and it has been justly observed, that the merit of Guido consisted in that moving and persuasive beauty, which does not so much proceed from a regularity of features, as from the lovely air which he gave to the mouth, and the modesty which he placed in the eye. Yet there is somewhat theatrical in his attitudes, whence it seems that he confined all his power to the expression of the countenance. His draperies are always disposed with large folds, in a grand style, and with singular judgement they are contrived to fill up the void spaces, free from stiffness or affectation, yet noble and elegant. Though he understood not the chiaro-oscuro, he sometimes practised it, by the force of genius. His pencil was light, and his touch free, but delicate; and though he laboured his pictures highly, he generally gave some bold strokes to his work, in order to conceal the toil and time he had bestowed upon it. His colouring is generally very clear and pure; but latterly, his pictures had a grayish cast, which changed into a livid colour, and his shadows partook of the green. Many of his latter performances are not to be placed in competition with those which he painted before he fell into distressed circumstances, by an inordinate passion for gaming; when, as his necessities compelled him to work for immediate subsistence, he contracted the habit of painting in a slight and negligent manner, without any attention to his honour or fame. In the church of St. Philip Neri, at Fano, is a grand altar-piece by Guido, representing Christ delivering the keys to St. Peter. The head of our Saviour is exceedingly fine, that of St. John admirable, and the other apostles are in a grand style, full of elegance, with a strong expression, and the whole well preserved. In the archiepiscopal gallery at Milan is a St. John, wonderfully tender in the colouring, and the graces diffused throughout the design excite the admiration of every beholder. At Bologna, in the Palazzo Tanaro, is a most beautiful picture of the Virgin, the Infant Jesus, and St. John; in which the heads are exquisitely graceful, and the draperies in a grand style. But in the Palazzo Zampieri is preserved one of the most capital paintings of Guido. The subject is, the Penitence of St. Peter, with one of the apostles seeming to comfort him. The figures are as large as life, and the whole of an astonishing beauty; the painter having shown, in that single performance, the art of painting carried to its highest perfection. The heads are nobly designed; the colouring is clear and precious; and the expression inimitably just and natural. There was also in the collection of the marquis of Hastings, but afterwards of Mr. West, a fine head by Guido, representing Christ crowned with thorns, painted in a style nearly approaching to perfection, blending in the expression all that can possibly be imagined of

[The Flight of Lot with his Daughters.—Guido Ren

pious resignation and sublimity of character. This exquisite picture has been admirably engraved by Sharpe. Great were the rewards and honours which this accomplished artist received from popes and princes, as well as from cardinals and nobles of various countries; notwithstanding this, he abandoned himself to gaming so entirely as to be reduced to poverty, which brought on a dejection of spirits, and a languishing disorder, of which he died at Bologna in 1642. Guido was so extremely handsome in his person that Lodovico Caracci, in painting his angels, always took him for his model. Arpino, when asked by the pope his opinion of Guido's performances in the Capella Quirinale, replied, "our pictures are the work of men's hands, but these are made by hands divine."

BURNING WAX.

Wax is sometimes substituted for oil in lamps. The great secret on which the burning of wax lamps depends is the affording a supply of melted wax to the wick immediately upon its being lighted; for this purpose, care should be taken that bits of wax should be heaped up in contact with the wick, so that the flame may melt it instantly.

The wicks of Mr. Smithson's wax lamps are made of a single cotton thread, waxed by drawing them through melted wax: it is supported by a burner made of a small bit of tinned plate; which has two slits cut at each end, and the middle parts raised up to form a wicker-holder. A cup is the
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PYROTECHNY.

The Chinese appear to have been the first scientifick manufacturers of fire-works; they employed them at all their great festivals, and combined them with transparent lanterns so as to produce very pleasing and picturesque effects. In the present article we purpose pointing out the most convenient mode of making some of the most striking of these fire-works.

Rockets may be regarded as the grand basis of all pyrotechnical exhibitions, which are little more than modifications of their form, and of the materials of which they usually consist. A rocket is a cartridge or case made of stiff paper, which being filled in part with gunpowder, saltpetre, and charcoal, rises of itself into the air when fire is applied to it.

There are three sorts of rockets: small ones, the caliber of which does not exceed a pound bullet; that is to say, the orifice of them is equal to the diameter of a leaden bullet which weighs only a pound; (for the calibers or orifices of the moulds or the models used in making rockets are measured by the diameters of leaden bullets,) middle sized rockets, equal to the size of a ball of from one to three pounds; and large rockets, equal to a ball of from three to one hundred pounds.

To give the cartridges the same length and thickness, in order that any number of rockets may be prepared of the same size and force, they are put into a hollow cylinder of strong wood, called a mould. This mould is sometimes of metal, but at any rate it ought to be made of some very hard wood. This mould must not be confounded with another piece of wood called the *former* or *roller*, around which is rolled the thick paper employed to make the cartridge. If the caliber of the mould be divided into eight equal parts, the diameter of the roller must be equal to five of these parts. The vacuity between the roller and the interiour surface of the mould, that is to say, three eighths of the caliber of the mould, will be exactly filled by the cartridge.

For making the cartridges large stiff paper is employed. This paper is wrapped round the roller and then cemented by means of common paste. The thickness of the paper, when rolled up in this manner, ought to be about one eighth and a half of the caliber of the mould, according to the proportion given to the diameter of the roller. But, if the diameter of the roller be made equal to three fourths the caliber of the mould, the thickness of the cartridge must be a twelfth and a half of that caliber. When the cartridge is formed the roller is drawn out, by turning it round, until it is distant from the edge of the cartridge the length of its diameter. A piece of cord is then made to pass twice round the cartridge at the extremity of the roller, and into the vacuity left in the cartridge another roller is introduced, so as to leave some space between the two. One end of the pack thread must be fastened to something fixed, and the other to a stick conveyed between the legs, and placed in such a manner as to be behind the person who *chokes* the cartridge. The cord is then to be stretched by retiring backward, and the cartridge must be pinched until there remains only an aperture capable of admitting the *piercer*. The cord employed for pinching it is then removed, and its place is supplied by a piece of packthread, which must be drawn very tight, passing it several times round the cartridge, after which it is secured by means of running knots made one above the other.

Besides the roller, a rod is used, which being employed to load the cartridge must be somewhat smaller than the roller, in order that it may be easily introduced into the cartridge. The rod is pierced lengthwise, to a sufficient depth to receive the piercer, which must enter into the mould, and unite with it exactly at its lower part. The piercer, which decreases in size, is introduced into the cartridge through the part where it has been choked, and serves to preserve a cavity within it. Its length, besides the nipple or button, must be equal to about two thirds that of the mould. Lastly, if the thickness of the base be a fourth part of the caliber of the mould, the point must be made equal to a sixth of the caliber. It is evident there must be at least three rods, pierced in proportion to the diminution of the piercer, in order that the powder which is rammed in by means of a mallet may be uniformly packed throughout the whole length of the rocket.

After the cartridge is placed in the mould, pour gradually into it the prepared composition, taking care to pour only two spoonfuls at a time, and to ram it immediately down with the rod. When the cartridge is about half filled, separate with a bodkin the half of the folds of the paper which remains, and having turned them back on the composition, press them down with the rod and a few strokes of the mallet, in order to compress the paper on the composition. Then pierce three or four holes in the folded paper by means of a piercer, which must be made to penetrate to the composition of the rocket. These holes serve to form a communication between the body of the rocket and the vacuity at the extremity of the cartridge, or that part which has been left empty.

In small rockets this is filled with granulated powder, which serves to let them off; they are then covered with paper, and pinched in the same manner as at the other extremity. But in other rockets the pot containing stars, serpents, and running rockets, is adapted to it. A little of the composition of the rocket must be put into these holes, that the fire may be communicated to it.

Care must be taken, in placing the rockets when they are to be fired, to give them a vertical direction at their first setting out, which may be managed thus: have two rails of wood, of any length, supported at each end by a perpendicular leg, so that the rails be horizontal, and let the distance from one to the other be almost equal to the length of the sticks of the rockets intended to be fired; then in the front of the top rail drive square hooks at eight inches distance, with their points turning sidewise, so that when the rockets are hung on them the points will be before the sticks and keep them from falling or being blown off by the wind: in the front of the rail at bottom must be staples, driven perpendicularly under the hooks at top: through these staples put the small ends of the rocket-sticks. Rockets are fired by applying a lighted port-fire to their mouths.

The girandole chests for flights of rockets are generally composed of four sides, of equal dimensions, but may be made of any diameter, according to the number of rockets designated to be fired; the height of the chest must be in proportion to the rockets, but must always be a little higher than the rockets with their sticks. When the sides are joined the top must be fixed as far down the chest as the length of one of the rockets with its cap on. In this top should be as many square or round holes, to receive the rocket-sticks, as the pyrotechnist intends to have rockets; but he must let the distance between them be sufficient for the rockets to stand without touching one another; then from one hole to another must be cut a groove large enough for a quick-match to lie in; the top being thus fixed, the bottom must be placed at about a foot and a half distance from the bottom of the chest; in this bottom must be as many holes as in the top, and all to correspond, but these holes need not be so large as those in the top.

To make several sky-rockets rise in the same direction, and equally distant from each other, take six or any number of sky-rockets, of any required size; then cut some strong packthread into pieces of three or four yards long, and tie each end of these pieces to a rocket in the following manner: having tied one end of the packthread round the body of one rocket, and the other end to another, take a second piece of packthread and make one end of it fast to one of the rockets already tied, and the other end to a third rocket, so that all the rockets, except the two outside, will be fastened to two pieces of packthread; the length of thread from one rocket to the other may be what the maker pleases; but the rockets must be all of a size, and their heads filled with the same weight of stars, or other ornamental fires.

The prime being fired, all the rockets will mount at the same time and divide as far as the strings will allow, which division they will keep, provided they are all rammed alike and well made. They are called by some pyrotechnists *chained rockets*.

The dimensions and proper mode of poising rocket-sticks will next engage our attention. These points may be best illustrated by the accompanying tabular view :—

Weight of the rocket.		Length of the stick.		Thickness at top.	Breadth at top.	Square at bottom.	Poise from the point of the cone.	
L.	oz.	F.	in.	Inches.	Inches.	Inches.	F.	in.
6	0	14	0	1.5	1.85	0.75	4	1.5
4	0	12	10	1.25	1.40	0.625	3	9
2	0	9	4	1.125	1	0.525	2	9
	0	8	2	0.725	0.80	0.375	2	1
	8	6	6	0.5	0.70	0.25	1	10.5
	4	5	3	0.3750	0.55	0.35	1	8.5
	2	4	1	0.3	0.45	0.15	1	3
	1	3	6	0.25	0.35	0.10	11	0
	½	2	4	0.125	0.20	0.16	8	0
	¼	1	10½	0.1	0.15	0.5	5	0.5

The last column on the right, in the above table, expresses the distance from the top of the cone, where the stick, when tied on, should balance the rocket, so as to stand in an equilibrium on a point or the edge of a knife. The best wood for the sticks is dry deal, made thus :—When they are cut and planed according to the dimensions given in the table, cut, on one of the flat sides at the top, a groove the length of the rocket, and as broad as the stick will allow; then on the opposite flat side cut two notches for the cord which ties on the rocket to lie in; one of these notches must be near the top of the stick and the other facing the neck of the rockets; the distance between these notches may easily be known, for the top of the stick should always touch the head of the rocket.

The following charges for the preparation of rockets are the result of actual experiments ;—For rockets of four ounces—meal-powder one pound four ounces, saltpetre four ounces, and charcoal two ounces. Rockets of eight ounces require meal-powder one pound, saltpetre four ounces, brimstone three ounces, and charcoal one ounce and a half; and those of one pound require meal-powder two pounds, saltpetre eight ounces, brimstone four ounces, charcoal two ounces, and steel filings one ounce and a half.

Signal sky-rockets without reports are only sky-rockets closed and capped: these are very light, and therefore do not require such heavy sticks as those with loaded heads. Signal rockets, with reports, are fired in small flights; and often both these and those without reports are used for a signal to begin firing a collection of fire-works.

The method of fixing a sky-rocket with its stick on the top of another is as follows :—Having filled a two-pounder, which must contain only half a diameter above the piercer, and its head not more than ten or twelve stars; the stick of this rocket must be made rather thicker than common; and, when made, cut in half the flat way, and in each half a groove, so that when the two halves are joined the hollow made by the grooves may be large enough to hold the stick of a half pound rocket, which must be made and headed as usual. Put the stick of this rocket into the hollow of the large one, so far that its mouth may rest on the head of the two-pounder, from whose head carry a leader into the mouth of the small rocket. This combination has a very brilliant effect.

If two, three, or six sky-rockets, be fixed on one stick, and fired together, the tails of all will seem but as one of an immense size, and the breaking of so many heads at once will resemble the bursting of an air-balloon. The management of this device requires a skilful hand; but if the following instructions be well observed, even by those who have not made a great progress in this art, there will be no doubt of the rockets having the desired effect.

When one sky-rocket is fixed on the top of another, they are called *towering rockets*, on account of the great elevation which they attain. They are constructed as follows :—Fix on a pound rocket a head without a collar; then take a four ounce rocket of another kind, and rub the mouth of it with meal-powder wetted with spirits of wine: when done, put it in the head of the large rocket with its mouth downward; but previously place a piece of quick-match in the hole of the clay of the pound rocket, which match should be long enough to go a little way up the bore of the small rocket, to fire it when the large one is burnt out; the four ounce rocket being too small to fill the head of the other, roll round it as much tow as will make it stand upright in the centre of the head: the rocket being thus fixed, paste a single paper round the opening of the top of the head of the large rocket. The large rocket must have only half a diameter of charge rammed above the piercer; for, if filled to the usual height, it would turn before the small one takes fire and entirely destroy the intended effect. When one rocket is headed with another, there will be no occasion for any blowing-powder; for the force with which it sets off will be sufficient to disengage it from the head of the first fired rocket. The sticks for these rockets must be a little longer than for those headed with stars, rains, &c.

Caduceus rockets, in rising, form two spiral lines, from their being placed obliquely one opposite the other, and their counterpoise in their centre, which causes them to rise in a vertical direction. Rockets for this purpose must have their ends choked close, without either head or report, for a weight at top would be a great obstruction to their mounting.

The sticks to which these rockets are fixed must have all their sides alike, and equal to the breadth of a stick proper for a sky-rocket of the same weight as those intended to be used, and to taper downward as usual, long enough to balance them, one length of a rocket from the cross stick; which must be placed from the large stick six diameters of one of the rockets, and its length seven diameters; so that each rocket, when tied on, may form with the large stick an angle of sixty degrees. In tying on the rockets, place their heads on the opposite sides of the cross stick, and their ends on the opposite sides of the long stick; then carry a leader from the mouth of one into that of the other. When these rockets are to be fired, suspend them between two hooks or nails; then burn the leader through the middle, and both will take fire at the same time.

Honorary rockets are the same as sky-rockets, except that they carry no head nor report, but are closed at the top, on which is fixed a cone. On the case, close to the top of the stick, tie on a two ounce case, about five or six inches long, filled with a strong charge, and pinched close at both ends; then in the reverse sides, at each end, bore a hole similar to those in tourbillons; from each hole carry a leader into the top of the rocket. When the rocket is fired, and arrived at its proper height, it will give fire to the case at top, which will cause both rocket and stick to revolve very fast in their descent, and represent a worm of fire descending to the ground.

There is another method of placing the small case, which is by letting the stick rise a little above the top of the rocket, and tying the case to it so as to rest on the rocket: these rockets have no cones.

A third mode of constructing them is as follows: In the top of a rocket fix a piece of wood, in which drive a small iron spindle; then make a hole in the middle of the small case, through which put the spindle; then fix on the top of it a nut to keep the case from falling off; when this is done the case will revolve rapidly without the rocket.

Revolving wheels form an interesting feature in pyrotechnical exhibitions. The simple Catherine wheel is well known, and may be constructed by any person capable of manufacturing a common squib. It is little more than a tube charged with an active fire wound round a piece of wood, which acts like the nave of a wheel. Vertical wheels are made from ten inches to three feet diameter, and the size of the cases must differ accordingly; four ounce cases will do for wheels of fourteen or sixteen inches diameter, which is the proportion generally used. The best wood for wheels of all sorts is a light and dry beech.

Horizontal wheels are best when their felloes are made circular; in the middle of the top of the nave must be a pivot turned out of the same piece as the nave, two inches long, and equal in diameter to the bore of one of the cases of the wheel: there must be a hole bored up the centre of the nave. The wheel being made, a piece of wood should be nailed at the end of each spoke, (of which there should be six or eight,) with a groove cut in it to receive the case. These pieces should be fixed in such a manner that half the cases may incline upward and half downward, and that, when they are tied on, their heads and tails may come very near together; from the tail of one case to the mouth of the other should be carried a leader, secured with pasted paper. Besides these pipes, it will be necessary to put a little meal-powder inside the pasted paper, to blow off the pipe, that there may be no obstruction to the fire from the cases. By means of these pipes the cases will successively take fire, burning one upward and the other downward.

Horizontal wheels are often fired two at a time, and made to keep time like vertical wheels, only they are made without any slow or dead fire; ten or twelve inches will be enough for the diameter of wheels with six spokes.

Plural wheels are made to turn horizontally, and to consist of three sets of spokes, placed six at top, six at bottom, and four in the middle, which must be a little shorter than the rest: let the diameter of the wheel be ten inches; the cases must be tied on the ends of the spokes in grooves cut to receive them, or in pieces of wood nailed on the ends of the spokes, with grooves cut in them as usual: in clothing these wheels, make the upper set of cases play obliquely downward, the bottom set obliquely upward, and the middle set horizontally.

To make an *illuminated spiral wheel*, the pyrotechnist must first have a circular horizontal wheel made two feet diameter, with a hole quite through the nave; and then take four thin pieces of deal, three feet long each, and three quarters of an inch broad each: one end of each of these pieces is to be nailed to the felloe of the wheel, at an equal distance from one another, and the other end nailed to a block with a hole in its bottom, which must be perpendicular with that in the block of the wheel, but not so large. The wheel being thus made, a

hoop planed down very thin must be nailed to the felloe of the wheel, and wound round the four sticks in a spiral line from the wheel to the block at top; on the top of this block a case of Chinese fire must be fixed, and on the wheel any number of cases, which must incline downward, and burn two at a time. The axis for this wheel must be a little longer than the cone, and made very smooth at top, on which the upper block is to turn, and the whole weight of the wheel to rest. The entire framing of the wheel, with its connecting tubes, is shown in the accompanying figure.

With regard to the preparations of Chinese fire prepared in this country, which are said to surpass even those of the Chinese, the following are the most perfect:—

Composition of Chinese fire for calibers under ten twelfths of an inch.—Sixteen ounces each of meal-powder and saltpetre, four each of sulphur and charcoal, and fourteen of cast-iron finely pulverized.

Another.—Sixteen ounces of meal-powder, three each of sulphur and charcoal, and seven of cast-iron.

Another, for palm-trees and cascades.—Twelve ounces of saltpetre, sixteen of meal-powder, eight of sulphur, four of charcoal, and ten of cast-iron.

Another, white fire, for calibers of eight twelfths and ten twelfths of an inch.—Eight ounces of sulphur, sixteen each of meal-powder and saltpetre, and twelve of cast-iron.

Another, for gerbes of ten and eleven twefths and one inch caliber.—One ounce each of seltpetre, sulphur, and charcoal, eight each of meal-powder and cast-iron.

What are denominated fire-jets, or fire-spouts, are cases charged solid with particular compositions. These jets have a caliber of one third of an inch to one inch and a third in interiour diameter. They are seven or eight diameters in length, and are charged with the particular composition, driving each charge with twenty blows of a mallet. The first charge is the ordinary fire composition. Fire-jets are calculated for turning as well as for fixed pieces.

Common fire for calibers of one third of an inch.—Sixteen ounces of meal-powder, and three of charcoal.

Common fire for calibers of five twelfths to half an inch.—Sixteen ounces of meal-powder, and three and a quarter of charcoal.

Common fire for calibers above half an inch.—Sixteen ounces of meal-powder and four of charcoal.

Brilliant fire, for ordinary calibers.—Sixteen ounces of meal-powder and four of filings of iron.

Another, more beautiful.—Sixteen ounces of meal-powder, and four of filings of steel.

Another, more brilliant, for any caliber. Eighteen ounces of meal-powder, two of saltpetre, and five of filings of steel.

Brilliant fire, very clear, for any caliber.—Sixteen ounces of meal-powder, and three of filings of needles.

Small jessamine, for any caliber.—Sixteen ounces of meal-powder, one each of saltpetre and sulphur, and five of filings of steel.

White fire, for any caliber.—Sixteen ounces of meal-powder, eight of saltpetre, and two of sulphur.

White fire, for any caliber.—Sixteen ounces of meal-powder, and three of sulphur.

Blue fire, for parasols and cascades.—Eight ounces of meal-powder, four of s
of sulphur and zinc.

Another blue fire, for calibe
upward.—Eight ounces of sa
meal-powder and sulphur, and

The cases charged with th
only employed for furnishing
pieces, the movement of whi
cases; as these, having no p
not produce motion.

Blue fire, for any caliber.-
meal-powder, two of saltpetre,

Radiant fire, for any caliber
meal-powder, and three of pin

Green fire, for any caliber.-
meal-powder, and three and on
copper.

Aurora fire, for any caliber.
meal-powder, and three and one
der.

Italian roses, or fixed stars.—
powder, four of saltpetre, and o

Another for the same.—Tw
powder, sixteen of saltpetre, te
of crude antimony.

The forms which may be gi
gunpowder, or to the substance
either by increasing or retardin
by changing the appearance of
the form of jets, stars, rain, &
that a knowledge of these chan
considered highly important t
worker. For instance, in the
works, oak-charcoal, and pit-c
culiar appearance of rain.

The following is one of the f
ces of saltpetre, four of sulph
powder, two ounces and a half
and pit-coal.

Another composition intende
pose is similar to the Chines
larger proportion of powdered c

In the spur-fire, so called fr
bling the round of a spur, used
tres, the particular appearance
it from other fires is imparted t
black.

The composition is:—Four
of saltpetre, two of sulphur, a
ounces of lampblack.

The red fire used for theatri
from forty parts of dry nitrate
parts of finely-powdered sulphu
rate or oxymuriate of potash, a
phuret of antimony, mixed inti
but the chlorate of potash must
rately. A little orpiment is so
if the fire should burn dim a sm
dered charcoal is added.

Other compositions are made
ers, stars, Roman candles, roc
coloured fire-rains, white, blue,
nation, port-fires, &c., which s
and appearance of flame may
most as many variations as the
employed by the painters.

Bengal lights, although in so
is added, owe their particular

presence of antimony. The preparation was kept secret for some time.

The true formula is the following:—Three pounds of saltpetre, thirteen ounces of sulphur, and seven of sulphuret of antimony.

The composition is not used in cases, but is put into earthen vessels, usually shallow, and as broad as they are high. A small quantity of meal-powder is scattered over the surface, and a match is inserted. Pots thus prepared are covered with paper or parchment, to prevent the access of moisture, which is removed before the composition is inflamed.

Blue lights, or blue fire, is a preparation in which zinc and sulphur, or sulphur alone, are used. The particular colour is communicated by the zinc and sulphur.

The most perfect blue light is made as follows:—Four parts of meal-powder, two of saltpetre, three of sulphur, and three of zinc filings.

The representation of cascades and parasols is made with the above, or similar compositions, but the ordinary blue light used sometimes for signals, and adapted to any caliber of a case, is composed of sixteen parts of meal-powder, two parts of saltpetre, and eight parts of sulphur.

Brass is added in the sparkling and green fire, to prepare which about three parts of brass filings are mixed with sixteen parts meal-powder.

The amber lights are constituted of amber and meal-powder, in the proportion of three of the former to nine of the latter.

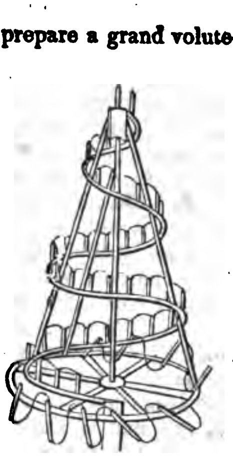
Verdigris and antimony are frequently joined to produce a green colour.

For the green match for cyphers, devices, and decorations, one pound of sulphur is melted; one ounce of powdered verdigris and half an ounce of crude antimony are then added; cotton loosely twisted is soaked in the mixture when melted. When used it is fastened to a wire, and the wire is bent into the shape required. It is primed with a mixture of meal-powder and spirits of wine, and a quick-match is tied along the whole length, so that the fire may communicate to every part at the same time.

A strong decoction of jujubes, treated with sulphur, imparts to cotton the property of burning with a violet-coloured flame.

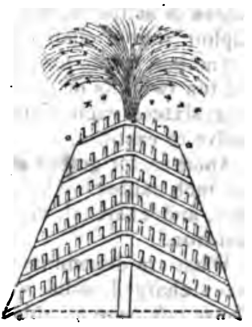
Sulphur alone, or zinc and sulphur, give a blue device.

If the pyrotechnist wish to prepare a grand volute illuminated with a revolving wheel, the first step is to procure a large circular wheel, and on its rim tie as many four ounce cases as will complete the circle, only allowing a sufficient distance between the cases that the fire may pass freely, which may be done by cutting the upper part of the end of each a little shelving; on each spoke fix a four ounce case about three inches from the rim of the wheel; these cases are to burn one at a time. On the front of the wheel form a spiral line with strong wire, on which tie port-fires, placing them on a slant, with their mouths to face the same way as the cases on the wheel; all these port-fires must be fired with the second cases of the wheel. Let there be a series of wooden spokes all made to screw into a block in the centre. When the large wheel begins to discharge the fire-work, the spiral will of course revolve and produce a very beautiful illuminated helix.



Illuminated works are much admired by the Italians, and in a grand exhibition an illuminated piece should be fired after every two or three wheels, or fixed pieces of common and brilliant fires; and likewise illuminated works may be made cheap, quick and easy.

To make an illuminated chandelier, the pyrotechnist must first have a frame made of thin wood This being accomplished, bore in the front of the branches, and in the body, and also in the plane at top, as many holes as can be placed at three inches distance from each other: in these holes put illuminations filled with white, blue, or brilliant charge. Having fixed in the port-fires, clothe them with leaders, so that the chandelier and crown may light together.



To prepare a brilliant yew-tree, a frame *a c d e*, must be firmly attached to the ground. When the branches are fixed, place illuminating port-fires on the top of each, as many as is convenient; behind the top of the stem fasten a gerbe or white fountain, which must be fired at the beginning of the illuminations on the tree. A series of these, varying in the angular directions taken by the boughs, produce a very fine effect.

Before quitting this part of our subject, it may be proper to notice those pyrotechnick compositions which are employed for military purposes. The following compositions are much used in warfare:—

Fusees for shells.—Three pounds four ounces of saltpetre, one of sulphur, and two pounds twelve ounces of meal-gunpowder, well mixed, and closely rammed in the fusee.

Cotton quick-match.—One pound twelve ounces of cotton, one pound eight ounces of saltpetre, ten of isingglass gelly, ten of meal-powder, two quarts of spirits of wine, and three of water.

Worsted quick-match.—Ten ounces of worsted, ten of meal-powder, three pints each of spirits of wine and water, and half a pint of isingglass gelly.

"Kitt," to rub over carcases, being a kind of Greek fire.—Nine pounds resin, six each of pitch and beeswax, and one of tallow; or twenty-one pounds of pitch, fourteen each of resin and beeswax, and one of tallow; or four pounds of pitch, two each of tallow, beeswax, and chopped flax.

Composition to fill carcases.—Ten pounds five ounces of corned powder, four poundas two ounces of pitch, two pounds one ounce of salpetre, one pound of tallow.

Port-fire, to fire great guns.—Six pounds of saltpetre, two of sulphur, one of meal-powder, well mixed, and closely rammed in the cases.

Stopped port-fire.—Four pounds of saltpetre, one pound eight ounces of sulphur, and two pounds eight ounces of meal-powder, to be moistened with linseed oil, and stopped in the case with a wooden drift.

Composition for quick-match.—Six pounds six ounces of saltpetre, eight pounds of meal-powder, one gallon each of vinegar and spirits of wine, and four of water.

Trunk fire, for fire-ships.—Eight pounds of meal-powder, four of saltpetre, and two of sulphur.

Greek fire, for dipping stores in a fire-ship.—Forty pounds of pitch, thirty each of resin and sulphur, ten of tallow, and two gallons of tar.

Smoke balls, to drive men from between decks, or hollow casemates.—Melt four pounds of pitch and one of tallow, in a pan set in a copper of boiling water, and add ten pounds of corned powder and one of saltpetre. Fill the shell a quarter full with this composition; then put in a little of a mixture of two pounds of sulphur with three of pit-coal; proceed to fill the shell half full, and then put in more of the sulphur and pit-coal; and the same when the shell is three quarters filled.

Dr. Mac Culloch, in an excellent paper on the Greek fire, attempts to show that there were two kinds of it, one of which contained saltpetre, and was analogous to the modern rocket, except that it had no projectile force, and required to be thrown by artillery, either mechanical or chymical, like the modern squibs. The other kind of Greek fire was a resinous composition, in which naphtha formed a principal ingredient.

The modern carcase is a combination of the two, the nitrous composition being used to fill the body, while its outside is payed over with the resinous composition or kitt; the approach to the carcase to extinguish it, is rendered dangerous by the loaded pistol-barrels which are inserted in the charge, and directed different ways.

Dr. Mac Culloch seems to think that an oil like naphtha could not be advantageously used in combination with powder or saltpetre. It appears, however, from the *Military Discipline* of Gerat Barry, an Irish captain in the Spanish service that for entering breaches or ships, or to break into an array of pikemen in ships, or to break in a narrow place, they used fire trunks, for which he gives this receipt:—

Six parts of musket powder, four of sulphur, three of saltpetre, one each of sal ammoniac, pounded glass, and of camphor, two of resin, and a half part of quicksilver, well mixed together, and then beaten up with oil of juniper-berries, or oil of petroleum (by which naphtha is no doubt meant) and spirits of wine. The trunks or wooden cases, bound round with marline, were charged in alternate layers with this composition and gunpowder; and the quantity of three musket charges of powder was placed at the bottom of the trunk, which was fastened to a pike-staff. He says that the flame of these trunks reaches full twelve feet.

AN ANECDOTE OF WAR.

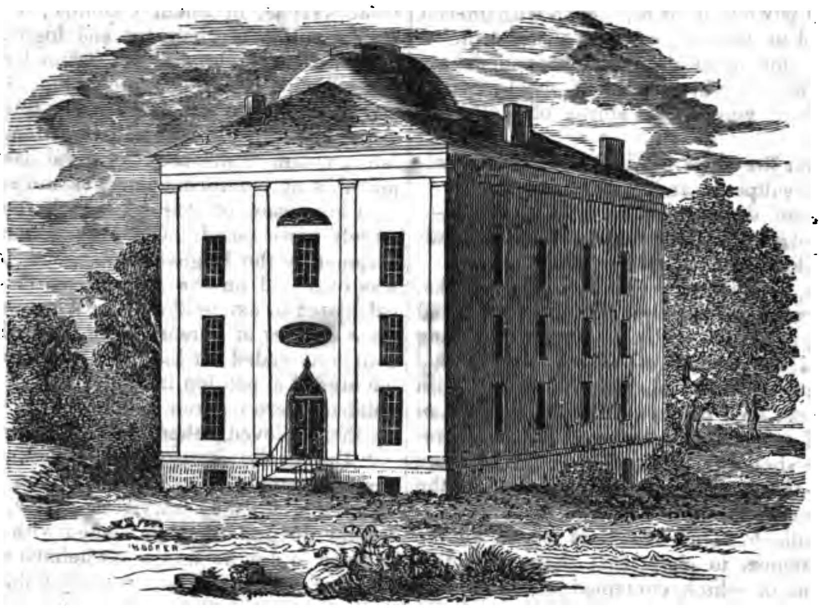
The following thrilling account of the execution of Col. Hayne, of South Carolina, during the war of the American revolution, was related by the Rev. M. Beckwith, in a discourse "On the evils of War."

"Among the distinguished men who fell victims
in the war of the American revc
Isaac Hayne, of South Carolina;
his amiability of character and hi
honour and uprightness, had secur
and affection of all who knew him.
and six children, the eldest a boy
age. His wife, to whom he was
fell a victim of disease: an event
probably by the inconveniences an
dent to a state of war, in which
largely participated. Col. Hayne
prisoner by the English forces, an
was executed on the gallows und
calculated to excite the deepest co
great number of persons, both Eng
cans, interceded for his life; the l
ton signed a petition in his behalf
children were on their bended kne
for their beloved father, but all in

"During the imprisonment of the
son was permitted to stay with hi
Beholding his only surviving pare
felt the deepest affection, loaded wi
demned to die, he was overwhelme
tion and sorrow. The wretched fa
to console him, by reminding him
ing grief of his son tended only to
misery; that he came into this wo
pare for a better; that he himself
die, and could even rejoice that his
near ended. 'To-morrow,' said h
immortality: you will accompany
of my execution, and when I am de
and bury it by the side of your poo
youth fell upon his father's neck,
father, my father, I die with you!'
he was loaded with irons, could n
brace of his son, and merely said,
my son; live, to honour God by a
take care of your brother and little

"The next morning, proceeds
these distressing events, Col. Hay
to the place of execution. His
him. Soon as they came in sight
the father strengthened himself and
son, show yourself a man! that tre
of my life and all my life's sorro
the wicked cease from troubling, a
at rest. Don't lay too much at hea
it will be short. 'T was but lately
—to-day I die. And you, my son,
must shortly follow.' 'Yes, my fa
broken hearted youth, 'I shall sh
for indeed I feel that I cannot live
melancholy anticipation was fulfill
more dreadful than is implied in th
of life. On seeing his father in
executioner, and then struggling
stood like one transfixed and moti
rour. Till then, proceeds the n
wept incessantly—but as he saw t
of his tears was staunched, and he
He died insane; and in his last mo
ed on his father, in terms that broug
hardest heart".

We only become moral men wh
our affections and talents to be dire



[Geneva Medical College.]

GENEVA MEDICAL COLLEGE.

The above cut represents the Medical Institution of Geneva College; an institution which promises ere long to be one of the most important of which the state of New York can boast. It is beautifully situated on the banks of the Seneca Lake, and we believe there are few villages in the world which can compare with it, in the picturesque beauty of its surrounding scenery, as well as in the associations which it brings to mind of an interesting race of inhabitants who have disappeared entirely before the march of civilization. The location for a medical college, is admirably adapted to the wants of the great west; and the moral and highly intellectual character of the inhabitants of Geneva, render it peculiarly fitted for elevating the standard of medical education in the western portion of the United States.

The respective chairs are all well filled—that of Chymistry, by the venerable and talented Dr. Edward Cutbush; of the Principles and Practice of Médicine, by Thomas Spencer; who is considered by far the strongest man in that particular branch in the state; Materia Medica and Obstetrics, by Dr. C. B. Coventry, of Utica; and Anatomy and Surgery, by Dr. J. Webster, of New York, the favourite pupil and the successor of the late distinguished Dr. Godman.

The classical department has at its head the Rev. Benjamin Hale, D. D., President; and in Mathematicks and Natural Philosophy, Horace Webster, A. M.; Chymistry, E. Cuthbert, M. D.; Civil Engineering and Statisticks, Gen. J. G. Swift; Latin and Greek Languages and Literature, D. Prentice, A. M.; History, Belles Lettres, and Modern Languages, Theodore Irving, Esq.

We are happy to announce that in all its departments, Geneva College is in a highly flattering condition, and that by the continued increase in the number of its pupils, New York will have reason to be proud of its usefulness, and our western youth to congratulate themselves on the advantages thus offered to them for the acquisition of learning at so pure a fountain.

THE HORSE-SWAP.

From a work entitled "Georgia Scenes, Characters, Incidents, &c., in the first half century of the republick," we have selected the following amusing story, which is well told by a native Georgian:

"During the session of the Superiour court, in the village of ———, when a number of people were collected in the principal street of the village, I observed a young man riding up and down the street, as I supposed, in a violent passion. He galloped this way, then that, and then the other. Spurred his horse to one group of citizens, then to another. Then dashed off at half speed, as if fleeing from danger; and suddenly checking his horse, returned —first in a pace, then in a trot, and then in a canter. While he was performing these various evolutions, he cursed, swore, whooped, screamed, and tossed himself in every attitude which man could assume on horseback. In short, he *cavorted* most magnanimously, (a term which, in our tongue, expresses all that I have described, and a little more) and seemed to be setting all creation at defiance. As I like to see all that is passing, I determined to take a position a little nearer to him, and to ascertain if possible, what it was that affected him so sensibly. Accordingly I approached a crowd before which he had stopped for a moment, and examined it with the strictest scrutiny. But I could see nothing in it, that seemed to have any thing to do with the carotter. Every man appeared to be in a good humour, and all minding their own business. Not one so much as noticed the principal figure. Still he went on. After a semicolon pause, which my appearance seemed to produce, (for he eyed me closely as I approached) he fetched a whoop, and swore that "he could out-swap any live man, woman or child, that ever walked these hills, or that ever straddled horse-flesh since the days of old daddy Adam." "Stranger," said he to me, "did you ever see the *Yallow* Blossom from Jasper?"

"No," said I, "but I have often heard of him."

"I'm the boy," continued he; "perhaps a *leetle*—jist a *leetle* of the best man, at a horse-swap, that ever trod shoe-leather."

I began to feel my situation a little awkward, when I was relieved by a man somewhat advanced in years, who stept up and began to survey the "*Yallow Blossom's*" horse with much apparent interest. This drew the rider's attention, and he turned the conversation from me to the stranger.

"Well, my old coon," said he, "do you want to swap *hosses?*"

"Why, I dont know," replied the stranger; "I believe I've got a beast I'd trade with you for that one, if you like him."

"Well, fetch up your nag, my old cock; you're jist the lark I wanted to get hold of. I am perhaps a *leetle*, jist a *leetle*, of the best man at a horse-swap, that ever stole *cracklins* out of his mammy's fat gourd. Where's your *hoss?*"

"I'll bring him presently; but I want to examine your horse a little."

"Oh! look at him," said the Blossom, alighting and hitting him a cut—"look at him. He's the best piece of *hoss*-flesh in the thirteen united universal worlds. There's no sort o' mistake in little Bullet. He can pick up miles on his feet and fling 'em behind him as fast as the next man's *hoss*, I don't care where he comes from. And he can keep at it as long as the sun can shine without resting."

During this harangue, little Bullet looked as if he understood it all, believed it, and was ready at any moment to verify it. He was a horse of goodly countenance, rather expressive of vigilance than fire; though an unnatural appearance of fierceness was thrown into it, by the loss of his ears, which had been cropt pretty close to his head. Nature had done but little for Bullet's head and neck; but he managed, in a great measure, to hide their defects, by bowing perpetually. He had obviously suffered severely for corn; but if his ribs and hip-bones had not disclosed the fact, *he* never would have done it; for he was in all respects, as cheerful and happy, as if he commanded all the corn-cribs and fodder-stacks in Georgia. His height was about twelve hands; but as his shape partook somewhat of that of the giraffe, his haunches stood much lower. They were short, strait, peaked and concave. Bullet's tail, however, made amends for all his defects. All that the artist could do to beautify it, had been done; and all that horse could do to compliment the artist, Bullet did. His tail was nicked in superiour style, and exhibited the line of beauty in so many directions, that it could not fail to hit the most fastidious taste in some of them. From the root it dropped into a graceful festoon; then rose in a handsome curve; then resumed its
first direction; and then mou
like a cypress knee to a perp
and a half inches. The wh
bewitching inclination to the
knew where his beauty lay,
to display it to the best
cracked, or if any one move
or coughed, or hawked, or sp
common, up went Bullet's tail
the *going up* did not please,
of necessity, for it was as di
movement, as was its direct
bold and rapid flight upward
of forty-five degrees. In thi
interesting appendage, until h
nothing in particular was to b
menced dropping it by half i
—then in triple time—then f
faster and shorter still; until
imperceptibly into its natural
compare sights to sounds, I s
was more like the note of a
else in nature.

Either from native sprigl
from uncontrolable activity, o
ble habit of removing flies b
feet, Bullet never stood still;
gentle fly-scaring movement c
peculiarly interesting.

"I tell you, man," procee
som, "he's the best live hoss
of Georgia. Bob Smart kn
here, Bob, and mount this h
motions." Here Bullet bristl
he had been hunting for Bob
just found him. Bob sprang
oo-oo!" said Bob, with a flutt
and away went Bullet, as if i
all his beauties spread in han

"Now fetch him back,"
turned and came in pretty mu

"Now trot him by." Bull
"*customary*"—sidled to the ri
exhibited at least three varieti
space of fifty yards.

"Make him pace!" Bob
the bridle and kicking at the
consistent movements obvious
disconcerted Bullet; for it w
to learn, from them, whether
stand still. He started to t
wouldn't do. He attempte
checked again. He stopped-
on. Bullet now rushed into
periment, and struck out a ga
pletely turned the tables upon
ly deserved a patent. It see
its elements from the jig, th
lion. If it was not a pace, it
it; and no man would ventu
else; so it passed off to t
owner.

"Walk him!" Bullet was
and he walked as if money
The stranger, whose name
was Peter Ketch, having e
heart's content, ordered his
bring up Kit. Neddy soon

well formed sorrel of the middle size, and in good order. His *tout ensemble* threw Bullet entirely in the shade; though a glance was sufficient to satisfy any one, that Bullet had the decided advantage of him in point of intellect.

"Why man," said Blossom, "do you bring such a hoss as that to trade for Bullet? Oh, I see you're no notion of trading."

"Ride him off, Neddy!" said Peter. Kit put off at a handsome lope.

"Trot him back!" Kit came in at a long, sweeping trot, and stopt suddenly at the crowd.

"Well," said Blossom, "let me look at him; may be he'll do to plough."

"Examine him!" said Peter, taking hold of the bridle close to the mouth; "he's nothing but a tacky. He an't as *pretty* a horse as Bullet, I know; but he'll do. Start 'em together for a hundred and fifty *mile;* and if Kit an't twenty mile ahead of him at the coming out, any man may take Kit for nothing. But he's a monstrous mean horse, gentlemen; any man may see that. He's the scariest horse, too, you ever saw. He won't do to hunt on, no how. Stranger, will you let Neddy have your rifle to shoot off him? Lay the rifle between his ears, Neddy, and shoot at the blaze in that stump. Tell me when his head is high enough."

Ned fired, and hit the blaze; and Kit did not move a hair's breadth.

"Neddy, take a couple of sticks and beat on that hogshead at Kit's tail."

Ned made a tremendous rattling; at which *Bullet* took fright, broke his bridle and dashed off in grand style; and would have stopped all farther negotiations, by going home in disgust, had not a traveller arrested him and brought him back; but Kit did not move.

"I tell you, gentlemen," continued Peter, "he's the scariest horse you ever saw. He an't as gentle as Bullet; but he won't do any harm if you watch him. Shall I put him in a cart, gig, or wagon for you, stranger? He'll cut the same capers there he does here. He's a monstrous mean horse."

During all this time, Blossom was examining him with the nicest scrutiny. Having examined his frame and limbs, he now looked at his eyes.

"He's got a curious look out of his eyes," said Blossom.

"Oh yes, sir," said Peter, "just as blind as a bat. Blind horses always have clear eyes. Make a motion at his eyes, if you please, sir."

Blossom did so, and Kit threw up his head rather as if something pricked him under the chin, than as if fearing a blow. Blossom repeated the experiment, and Kit jerked back in considerable astonishment.

"Stone blind, you see, gentlemen," proceeded Peter; "but he's just as good to travel of a dark night as if he had eyes."

"Blame my buttons," said Blossom, "if I like them eyes."

"No," said Peter, "nor I neither. I'd rather have 'em made of diamonds; but they'll do, if they don't show as much white as Bullet's."

"Well," said Blossom, "make a pass at me."

"No," said Peter; "you made the banter; now make your pass."

"Well I'm never afraid to price my hosses. You must give me twenty-five dollars boot."

"Oh certainly; say fifty, and my saddle and bridle in. Here, Neddy, my son, take away daddy's horse."

"Well," said Blossom, "I've made my pass; now you make yours."

"I'm for short talk in a horse-swap; and therefore always tell a gentleman, at once, what I mean to do. You must give me ten dollars."

Blossom swore absolutely, roundly and profanely, that he never would give boot.

"Well," said Peter, "I didn't care about trading; but you cut such high shines, that I thought I'd like to back you out; and I've done it. Gentlemen, you see I've brought him to a hack."

"Come, old man," said Blossom, "I've been joking with you. I begin to think you do want to trade; therefore, give me five dollars and take Bullet. I'd rather lose ten dollars, any time, than not make a trade; though I hate to fling away a good hoss."

"Well," said Peter, "I'll be as clever as you are. Just put the five dollars on Bullet's back and hand him over, it's a trade.

Blossom swore again, as roundly as before, that he would not give boot; "and," said he, "Bullet wouldn't hold five dollars on his back, no how. But as I bantered you, if you say an even swap, here's at you."

"I told you," said Peter, "I'd be as clever as you; therefore, here goes two dollars more, just for trade sake. Give me three dollars, and it's a bargain."

Blossom repeated his former assertion; and here the parties stood for a long time, and the by-standers (for many were now collected.) began to taunt both parties. After some time, however, it was pretty unanimously decided that the old man had backed Blossom out.

At length Blossom swore he "never would be backed out, for three dollars, after bantering a man;" and accordingly they closed the trade.

"Now," said Blossom, as he handed Peter the three dollars, "I'm a man, that when he makes a bad trade, makes the most of it until he can make a better. I'm for no rues and after-claps."

"That's just my way," said Peter; "I never goes to law to mend my bargains."

"Ah, you're the kind of boy I love to trade with. Here's your hoss, old man. Take the saddle and bridle off him, and I'll strip yours; but lift up the blanket easy from Bullet's back, for he's a mighty tenderbacked hoss."

The old man removed the saddle, but the blanket stuck fast. He attempted to raise it, and Bullet bowed himself, switched his tail, danced a little, and gave signs of biting.

"Don't hurt him, old man," said Blossom archly; "take it off easy. I am, perhaps, a leetle of the best man at a horse-swap that ever catched a coon."

Peter continued to pull at the blanket more and more roughly; and Bullet became more and more *cavortish:* insomuch, that when the blanket came off, he had reached the *kicking* point in good earnest.

The removal of the blanket, disclosed a sore on Bullet's backbone, that seemed to have defied all medical skill. It measured six full inches in length, and four in breadth; and had as many features as

Bullet had motions. My heart sickened at the sight*; and I felt that the brute who had been riding him in that situation, deserved the halter.

The prevailing feeling, however, was that of mirth. The laugh became loud and general, at the old man's expense; and rustick witticisms were liberally bestowed upon him and his late purchase. These, Blossom continued to provoke by various remarks. He asked the old man, "if he thought Bullet would let five dollars lie on his back." He declared most seriously, that he had owned that horse three months, and had never discovered before, that he had a sore back, "or he never should have thought of trading him," &c. &c.

The old man bore it all with the most philosophick composure. He evinced no astonishment at his late discovery, and made no replies. But his son, Neddy, had not disciplined his feelings quite so well. His eyes opened, wider and wider, from the first to the last pull of the blanket; and when the whole sore burst upon his view, astonishment and fright seemed to contend for the mastery of his countenance. As the blanket disappeared, he stuck his hands in his breeches pockets, heaved a deep sigh, and lapsed into a profound reverie: from which he was only roused by the cuts at his father. He bore them as long as he conld; and when he could contain himself no longer, he began, with a certain wildness of expression, which gave a peculiar interest to what he uttered: "His back's mighty bad off; but dod drot my soul, if he's put it to daddy as bad as he thinks he has, for old Kit's both blind and *deef*, I'll be dod drot if he eint."

"The devil he is," said Blossom. "Yes, dod drot my soul if he *eint*. You walk him and see if he *eint*. His eyes don't look like it; but he *jist as live go agin* the house with you, or in a ditch, as any how. Now you go try him." The laugh was now turned on Blossom; and many rushed to test the fidelity of the little boy's report. A few experiments established its truth, beyond controversy.

"Neddy" said the old man, "you oughtn't to try and make people discontented with their things." Stranger, don't mind what the little boy says. If you can only get Kit rid of them little failings, you'll find him all sorts of a horse. You are a *leetle* the best man, at a horse-swap, that ever I got hold of; but don't fool away Kit. Come, Neddy, my son, let's be moving; the stranger seems to be getting snappish."

THE EMIGRATED INDIANS.

The condition of the tribes who have removed from their birth-places east, to new homes west of the Mississippi river, has recently been the subject of frequent notice in the publick prints. It very naturally excites great interest. From the inception of the policy of transplanting the Indians within the several states, apprehensions have been extensively felt that in the remote region proposed to be assigned to them, they would be assailed by the indigenous tribes, and engaged in frequent hostilities. It has also been feared, (and the fear was founded on misconception or ignorance of the resources of the country allotted to them,) that, finding themselves straitened for the means of subsis
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The Choctaws, from their
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The principal part of this

the years 1832—3; preparations for their removal were made in 1831, and many of them left their old country late in that year; but few, if any, however, reached the new country till the spring of 1832.

The country inhabited by the Choctaws is extensive and exceedingly fertile; the face of the country is generally high, or what is called rolling; some parts of it mountainous; the whole is well watered, and has plenty of timber; there are some prairies, which, however, as well as the timber lands, are of first rate soil. The whole country is adapted to corn and stock; the northern and western portions to corn and wheat, and other small grain; the southern part, bordering on Red river, to cotton.

The first year's emigrants made corn, not only sufficient for their own use, but had a considerable surplus, which was disposed of to Government for issue to those emigrants that arrived in the fall and winter of that year. The next year (1833) the emigrants had a large surplus of corn, over and above their own wants, for market; over forty thousand bushels were purchased by the Government, and fed to the emigrants of that year; since then, to the present time, these people have been equally prosperous in their agricultural pursuits; many of them have become extensive farmers, cultivating cotton, corn, and possessing large stocks of cattle; they have cotton gins and mills of different kinds, as well as shops and mechanicks; in fine it may be truly said, that the Choctaws are rapidly advancing in agricultural knowledge, and in mechanick arts.

In travelling through the Choctaw country, one sees little, if any, difference, in an agricultural point of view, from new frontier white settlements; their cabins are constructed with equal order and substantiality, and apparently with as many comforts and conveniences; their fields are under good fences; they have gardens, and cultivate fruit-trees, peaches, apples, &c.; are civil and attentive to travellers, understand the value of money; and all of them, or nearly so, have in their houses the common luxuries of coffee, tea, sugar, &c.

Without going into a further detail in relation to this tribe, it must be apparent they are rapidly advancing in civilization, and I have no hesitation in saying, that for all the comforts of domestick life, their resources are ample and abundant, and far better than could possibly have been anticipated, prior to their removal, in so short a time.

The Cherokees. To this tribe has been allotted a very extensive, as well as a very fine tract of country; those parts over which I have travelled, possess a soil of very superiour quality, adapted to the production of wheat, small grain of various kinds, and corn of the largest growth; the whole country is finely and abundantly timbered, and well watered, and the climate is exceedingly favourable to stock.

But a small number of this tribe have as yet removed to the new country; those that have settled there, however, and many of them have been in the country several years, are, in a pecuniary point of view, well off; they raise wheat and corn in great abundance; and their stocks of cattle, of hogs, of sheep, &c., are numerous. The people find a market for their surplus productions in the Government, by supplying the garrison situated in their country, and supplying the new emigrants with corn, beef &c.

The greater portion of the Cherokees west are farmers, have good and comfortable houses, and live, many of them, as well, and as genteel, and in a pecuniary point of view will compare with the better classes of farmers in the states. As a people generally, they are agriculturists; and as such, their resources are equal, if not superiour to one fourth of the tillers of the soil in the old states.

The Creeks and Seminoles. The section of country set apart for these tribes is about the same in extent with that of the Choctaws, but not so mountainous. The soil is considered to be equal in fertility to any in the southwestern section of the country; it is also well watered, and has plenty of timber; there are some prairies, which, however, are of great advantage to the settler—the soil being rich and easy to cultivate, and they are very profitable for raising stock.

The Creeks are a corn-growing people; those that have been in the country some years, raise corn in large quantities; some of the principal farmers, crib from five to ten thousand bushels of a season. They do not raise much stock; nor are they, as a people, so far advanced in civilization as the Cherokees and Choctaws; though as agriculturalists, so far as raising corn, they excel either of the above named tribes. They raise stock sufficient for their own consumption, but none of any consequence for sale.

About four hundred Seminoles were emigrated last year; they reached their locations, however, too late to make a crop; their crops this year, I am informed, are not very promising; they are about changing their locations; they go farther west; their object is better hunting-grounds.

The large number of Creeks that emigrated last winter, have planted extensively, and have a prospect of plentiful crops; they are also collecting stock, and are laying the foundation of numerous herds of cattle, hogs, &c. The resources of this people are, at present, equal to all their wants and comforts; and the superiour fertility of their land, aided by their evident tendency to industry, will in a few years, place them in a condition equal to their neighbours, the Cherokees and Choctaws.

Senecas and Senecas and Shawnees. These tribes inhabit a high, healthy, well-watered, and timbered country, the soil rich and productive. They were emigrated in 1832, are agriculturalists, and are mainly engaged in that pursuit; they raise wheat and corn, and their country is well adapted to raising stock, of which they have considerable herds; being remote, however, from a market their cropping is confined to their own wants, and for these they provide liberally of all the substantials of life. The use of coffee, tea, and sugar is common among them. Their cabins are well constructed, combining both comfort and convenience, and their arrangements in farming have the appearance of neatness and order; they have mills, shops, and some good mechanicks; their resources are abundant, and their condition apparently happy.

The Quapaws. These people were emigrated in the fall of 1834; their country, in point of soil, water, timber, and health, is similar to and equally as good as their neighbours, the Cherokees, Senecas and Senecas and Shawnees, &c. They are not so far advanced in civilization, as the several tribes of

Indians above named; but a more honest, quiet, peaceable people, are not to be found in any section of the Indian country. They are industrious, and are exceedingly desirous of making for themselves a comfortable home. Their temporary location, doubtless, has in some measure abridged their exertions, in the construction of good cabins, clearing and putting under fence, large fields for raising corn, &c.

The Osages. This tribe has made but little progress towards civilization; their subsistence mainly depends upon the game of the country. They raise some corn and beans, but the culture is rude; hence but little is obtained therefrom. They raise no stock; they obtain their horses from those Indians residing far to the south and west of them. Their country possesses excellent soil, is well-watered and timbered; not being agriculturalists, their condition and resources are similar to other wild and roving bands of Indians, whose occupations are hunting and war.

The foregoing comprises all the tribes of Indians residing within the acting superintendency of the Southwestern territory, and with the exception of the last mentioned tribe, (Osages,) have been emigrated to that country, the greater portion since 1831, and all are fast progressing in a knowledge of agriculture, and of the mechanick arts; they are too far advanced in civilization, in my opinion to retrogade. Labouring, therefore, as they are, for their own happiness, a discreet and correct management of them must ere long (constituted as society is) place them in a condition to appreciate, as well as in a few years to adopt, a form of government, based upon enlightened principles of political and civil rights.

Globe.

PUBLICK HOUSES.

Houses for the accommodation of travellers have different names in different countries; they are ca led inns, taverns, hotels, mansion-houses, &c. B whatever the name may be, their object is the same they are the *travellers' home.*

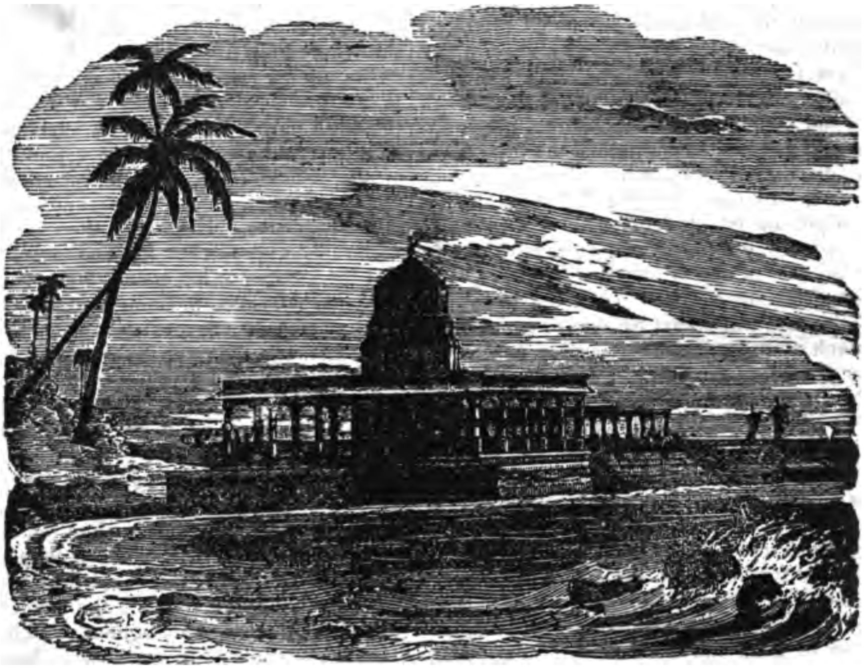
In some parts of the world—England for exan ple—if a person who keeps a publick house refus to receive a traveller into his house, or to find hi victuals and lodging, on his presenting and offerin him a reasonable price for them, he is liable to prosecuted for damages, and may be fined.

In ancient times, places for the reception of tra ellers in the East, especially in Palestine, were ca led caravansaries. In Hindostan, at the prese time, they are called *choultries.*

The engraving represents very accurately, one these choultries. It is on a small sandy island, ca led Ramiseram, situated in the straits between Ce lon and the main land (Hindostan,) and separate from it only by a narrow frith. It is one of the mo beautiful and costly in all India.

Choultries are open on every side, so that trave lers can approach them with convenience, from e ery direction. The roof of one of these buildings supported by columns, which are sometimes highl ornamented. Such is the case, especially, with th at Ramiseram. The stone-work is also of the ric est kind. The building is quadrangular and qui elevated. Its cornices and capitals of the pillars a finished with great care. It stands upon a rock foundation, extending some distance into the se with a broad terrace round it, paved with ston forming a square. From three sides of this terrac is a descent into the water, by a flight of stone step The Hindoos are much in the habit of bathing; the religion, in fact, requires it. The stone steps lea ing down into the sea are for this purpose.

There are many objects of curiosity on this litt island. Near the choultry which we have been d scribing, are several tombs, which the Mohamm



[An Eastern Choultry.]

doos call the tombs of Cain and Abel, and their families.

On the other side of the island is a very large and high temple, the gateway of which is one hundred feet high, and composed of stones of the most enormous size. The gate itself is forty feet high. The temple is held to be uncommonly sacred, and no water is used in it for idolatrous purposes, but what is brought from the river Ganges.

SHOEING HORSES.

Nothing engenders so frightful a chain of diseases in a horse, all tending to disable him, as improper treatment of the animal's feet. Nature had never taken greater pains to form an exquisite anatomical specimen of mechanical power, than when it formed the foot of a horse; and to this beautiful, delicate, and complicated formation, does he owe his power of speed over most others of the brute creation. In a state of nature, the horse's foot is seldom if ever diseased; in a state of domesticity, it is more or less unsound in seven cases out of ten. In a state of nature, the foot, being unencumbered by a shoe, is not prevented from assuming that position on the ground which keeps it in a sound condition, and enables each of its component parts to discharge their several functions. In a state of domesticity, the animal is obliged to wear a shoe, for the purpose of protecting its hoof from the roughness of hard roads; and this shoe is generally so constructed, as to inflict considerable injury upon the foot, by incapacitating its several component parts from performing their functions, thereby producing a state of disease. Contracted hoof, sand-cracks, thrush, grease, stiffness in the flexor tendon of the leg, weakness in the pastern and knee-joints, and a tendency to genuflexion, are some of the various disturbances produced by improperly shoeing a horse, so as to impede any of the necessary actions of the foot. And yet, most farriers, totally ignorant of the anatomy of the horse's foot, and of the various uses of its several parts, apply the shoe so as always to produce the effects we have just endeavoured to describe.

One of the most important organs of the foot of a horse is that portion which every body knows under the designation of the frog. Upon the health of this organ depends that of the whole foot; and yet, the ignorant farrier seems to have conceived so violent an antipathy to this frog; that he always endeavours to cut as much of it away as he possibly can, without actually wounding the animal; and as, from the mode of shoeing generally adopted, a great portion of the frog is often dried up and decayed, the blacksmith finds no great difficulty in paring it away to almost nothing. The consequence of this we shall endeavour to explain, by describing the use of the frog.

This organ is seated at the heel just beneath the hoof and behind its bars. It forms a sort of case for the end of the flexor tendon, which it covers like a bulb. It likewise secretes an unctuous liquor, which serves to keep the horn of the hoof moist and to prevent it from cracking. The frog is also an elastick wedge, which contracts and expands with the hoof, and when this wedge receives its due pressure as the animal walks, it keeps the bars in their proper state of expansion, and counteracts any tendency in the hoof to permanent contraction. Thus then, its functions are indispensable to keep the foot sound; for, if it were destroyed, the bottom of the flexor tendon of the leg, would be exposed to disease; again, if it did not secrete oil to keep the hoof moist, the latter would crack, as is often the case; lastly, if it were dried up and deprived of its elastick power, the foot would become permanently contracted, and the horse lame, which is also a matter of very common occurrence.

Two things are evident from what we have just stated:—1. The secretion, elasticity, and mechanical action of the frog, are absolutely necessary to keep the foot of the horse in a sound state; 2. If, from improperly placing the shoe, or from any other cause, the frog should be deprived of the stimulus necessary to enable it to carry on its natural action, the foot must fall into a state of disease. With reference to this latter, from the position of the foot and the resources provided by nature, it can occur but very seldom that any accidental cause deprives the frog of its power of action; and, as it is an undoubted fact that the shoe, when improperly put on (as it is in seven cases out of ten) produces this effect, by raising the heel and preventing the frog from receiving the slightest pressure—and the necessary pressure can alone give the proper stimulus—it is reasonable to conclude that, in most cases of diseased feet in horses, the diseased action is the effect of bad shoeing.

If the farrier would observe the horse in a state of nature—if he would examine the yet unbroken, and consequently unshodden colt, he would find that the broad, circular foot presses fully on the ground, the frog receiving, as the animal walks, at each elastick rebound caused by the play of the pastern, a slight pressure against the ground, which excites it, keeps it in healthy action, and indeed preserves the whole foot from disease. He would also perceive, after a more minute observation, that not only is the frog an elastick body, but that the hoof itself, though a horny substance, is elastick, and that it contracts and expands by the action of the muscles of the sensible foot, of which it is only the case or covering, preserving it from injury, but yielding to all its impulses. He would then, if he were not a dolt, reason upon what he had observed, and infer that for a horse to be sound upon its feet, it must walk in that exact position which nature designed for it; and that any deviation from that position is unnatural, and deprives the horse of a portion of its power. He would also think that nature, by placing the animal firmly on its heels, and not on the front edge of its hoof, as most horses stand when improperly shod, did so for some wise purpose, and that the slight blows given to the frog as the animal walked, were not without an object, and therefore ought to be continued even when the shoes were on.

It is much to be desired that a shoe were invented which should have the faculty of yielding to the different impressions which the hoof would impart to it through its elastick action, which action, however, is but slight. In applying a hard, unyielding iron shoe to a horny substance which gently contracts and expands during the action of walking, a degree of inconvenience must always be felt by the animal; but this inconvenience is greatly increased when the natural position of the foot is altered. It becomes, therefore, a matter of vital importance to the well-being of the animal that the shoe should be so formed and fastened on as to allow that action to continue unimpeded which nature has imparted to the horse's foot. For this purpose we offer the following directions, hoping that, as we have called the attention of our readers to the subject, they will give it their earnest attention.

The horse's foot being circular and not oval, the shoe should be made in that form; or rather the hoof should be measured, and the shoe made exactly to correspond. An oval or elliptick foot is generally, nay, we may say always, diseased. It has assumed that shape in consequence of the contraction of the bars, brought on solely by a diseased state of the frog for want of pressure; and in no one instance of oval-formed feet will the frogs be found healthy. The moment the foot is lifted from the ground, the smell indicates the diseased frog, though perhaps cockney equestrians consider this the natural perfume of the organ when in health.

The shoe should be as light as possible consistently with the labour the animal has to undergo. Before it is put on, the hoof should be pared away toward the heels, in such a manner that without the shoe the horse should stand with the frog close to the ground, as when in a state of nature; when the shoe is on, it should be filed away towards the heels, being left only sufficiently thick to enable the frog in the natural position of the animal without a rider or burthen, just to clear the ground; so that when the horse bears its burthen or its rider, the frog of the shoed foot should receive the same pressure from the ground that it would do if the shoes were taken off and the animal turned loose. When a horse is shod according to the present system, besides the various diseases brought on by the want of the action of the frog, the animal walks upon *its toes* (the expression cannot be misunderstood,) and the proper muscular action of the foot and leg is perverted. Hence many horses fall dead lame without the farrier being able to assign any cause for it, although he will talk dogmatically enough on the subject, to confound those who know no better than himself.

FORCE OF THE WATERS.

After surmounting all obstacles, the lumberers with their stock arrive at the spot which they have had in view, and immediately commence building a camp. The trees around soon fall under the blows of their axes, and before many days have elapsed a low habitation is reared and fitted within for the accommodation of their cattle, while their provender is secured on a kind of loft covered with broad shingles or boards. Then their own cabin is put up; rough bedsteads, manufactured on the spot, are fixed in the corners; a chimney, composed of a frame of sticks plastered with mud, leads away the smoke; the skins of bears or deer, with some blankets, form their bedding, and around the walls are hung their changes
of home-spun clothing, guns, and
of life. Many prefer spending th
scented hay and corn blades of
are laid on the ground. All a
lumberers set their "dead-falls,"
and "spring guns," in suitable
camp, to procure some of the be
around such establishments.

Now the heavy clouds of Nov
northern blasts, pour down the
flakes. The winter has fairly s
the sun's gladdening rays fall
hut. In warm flannels his bo
skin of a rackoon covers his
moose-skin leggins reach the gir
around his waist, while on broad
shoes, he stands from the earlie
hacking the majestick pines tha
have embellished the forest. T
uable trees no longer resounds
as they tumble here and there,
the rustling and crackling of t
heavy trunks sinking into the d
sands of large pines thus cut
afford room for the younger tree
profusely to supply the wants of

Weeks and weeks have elaps
white covering has become thick
ed by the increasing intensity of
trees have all been sawn into
the long repose of the oxen has
ing them to the nearest frozen
gradually becomes covered wit
mass of timber, and, their task
berers wait impatiently for the
winter.

At this period, they pass the
moose, the deer, and the bear, fo
wives and children; and as thes
cellent woodmen, great havock
game.

Many skins of sables, mart
they have procured during the in
bour, or under night. The sno
way, as the rains descend in tor
berers collect their utensils, har
prepare for their return. This
safety. From being lumberers
millers, and with pleasure each
file to the saws. Many logs ha
the dams on the swollen wate
streams, and the task commenc
on through the summer, of cuttin

The great heats of the dog-day
ground; every creek has becom
here and there, where in a deep
the trout have found a retreat;
gles of multitudes of rocks proj
resting places to the wood-duck
breed on the borders of these st
of "saw-logs," remain in every
above each rapid or fall. The m
emptied of its timber, and he
some expedient to procure a fres

It was my good fortune to witn
ployed for the purpose of collec
had not reached their destinati
more pleasure that it was seen in

little family. I wish for your sake, reader, that I could describe in an adequate manner the scene which I viewed; but, although not so well qualified as I wish to be, rely upon it, that the desire which I feel to gratify you, will induce me to use all my endeavours to give you an idea of it.

It was the month of September. At the upper extremity of Dennisville, which is itself a pretty village, are the saw-mills and ponds of the hospitable Judge Lincoln and other persons. The creek that conveys the logs to these ponds, and which bears the name of the village, is interrupted in its course by many rapids and narrow embanked gorges. One of the latter is situated about half a mile above the mill-dams, and is so rocky and rugged in its bottom and sides, as to preclude the possibility of the trees passing along it at low water, while, as I conceived, it would have given no slight labour to an army of woodmen or millers, to move the thousands of large logs that had accumulated in it. They lay piled in confused heaps to a great height along an extent of several hundred yards, and were in some places so close as to have formed a kind of dam. Above the gorge there is a large natural reservoir, in which the head waters of the creek settle, while only a small portion of them ripples through the gorge below, during the latter weeks of summer and in early autumn, when the streams are at their lowest.

At the *neck* of this basin, the lumberers raised a temporary barrier with the refuse of their sawn logs. The boards were planted nearly upright, and supported at their tops by a strong tree extended from side to side of the creek, which might there be about forty feet in breadth. It was prevented from giving way under the pressure of the rising waters, by having strong abutments of wood laid against its centre, while the ends of these abutments were secured by wedges, which could be knocked off when necessary.

The temporary dam was now finished. Little or no water escaped through the barrier, and that in the creek above it rose in the course of three weeks to its top, which was about ten feet high, forming a sheet that extended upward fully a mile from the dam. My family was invited, early one morning, to go and witness the extraordinary effect which would be produced by the breaking down of the barrier, and we all accompanied the lumberers to the place. Two of the men, on reaching it, threw off their jackets, tied handkerchiefs round their heads, and fastened to their bodies a long rope, the end of which was held by three or four others, who stood ready to drag their companions ashore, in case of danger or accident. The two operators, each bearing an axe, walked along the abutments, and at a given signal, knocked out the wedges. A second blow from each sent off the abutments themselves, and the men, leaping with extreme dexterity from one cross log to another, sprung to the shore with almost the quickness of thought.

Scarcely had they effected their escape from the frightful peril that threatened them, when the mass of waters burst forth with a horrible uproar. All eyes were bent toward the huge heaps of logs in the gorge below. The tumultuous burst of the waters instantly swept away every object that opposed their progress, and rushed in foaming waves among the timber that every where blocked up the passage. Presently a slow, heavy motion was perceived in the mass of logs; one might have imagined that some mighty monster lay convulsively writhing beneath them, struggling with a fearful energy to extricate himself from the crushing weight. As the waters rose, this movement increased; the mass of timber extended in all directions, appearing to become more and more entangled each moment; the logs bounced against each other, thrusting aside, demerging, or raising into the air those with which they came in contact:—it seemed as if they were waging a war of destruction, such as ancient authors describe the efforts of the Titans, the foamings of whose wrath might to the eye of the painter have been represented by the angry curlings of the waters, while the tremulous and rapid motions of the logs, which at times reared themselves almost perpendicularly, might by the poet have been taken for the shakings of the confounded and discomfited giants.

Now the rushing element filled up the gorge to its brim. The logs, once under way, rolled, reared, tossed and tumbled amid the foam, as they were carried along. Many of the smaller trees broke across, from others great splinters were sent up, and all were in some degree seamed and scarred. Then in tumultuous majesty swept along the mingled wreck, the current being now increased to such a pitch, that the logs, as they were dashed against the rocky shores, resounded like the report of distant artillery, or the angry rumblings of the thunder. Onward it rolls, the emblem of wreck and ruin, destruction and chaotick strife. It seemed to me as if I witnessed the rout of a vast army, surprised, overwhelmed, and overthrown. The roar of the cannon, the groans of the dying, and the shouts of the avengers, were thundering through my brain; and amid the frightful confusion of the scene, there came over my spirit a melancholy feeling, which had not entirely vanished at the end of many days.

In a few hours, almost all the timber that had lain heaped in the rocky gorge, was floating in the great pond of the millers; and as we walked homeward, we talked of the *Force of the Waters.*

Audubon.

NIGHT THE PROPER PERIOD FOR SLEEP.

Valangin relates a circumstance which satisfactorily proves the advantage of sleeping during the night instead of the day. It was an experiment made by two colonels of horse, in the French army, who had disputed much which period of the twenty-four hours was the fittest for marching, and for repose. As this was a very interesting subject, in a military point of view, to have it ascertained, they obtained leave from the commanding officer to try the experiment. One of them, although it was in the heat of the summer, marched in the day, and rested at night—he arrived at the termination of a march of six hundred miles without the loss of either men or horses—the other, who conceived it would be less fatiguing to march during the cool of the evening and part of the night, than in the heat of the day, at the end of the same march, had lost many of his horses and men.

[Mount Seir, and the Land Edom.]

ILLUSTRATIONS OF SCRIPTURE.

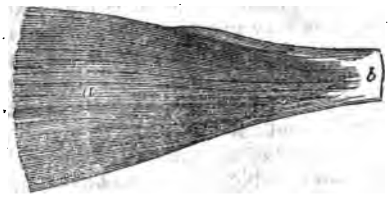
In the sixth verse of the fourteenth chapter of Genesis, mention is made of Mt. Seir, a view of which is given above. The term "Mount Seir," or rather the mountains of Seir, must be understood with considerable latitude. It was applied indefinitely to that range of mountains, which, under the modern names of Djebal, *Shrar*, and Hasma, extends from the southern extremity of the Dead sea to the gulf of Akaba. The reader will recollect the Ghor, or valley, extending in the same direction, which is supposed to have formed the continued channel of the Jordan before its waters were lost in the Dead sea. Now the mountains of Seir rise abruptly from this valley, and form a natural division of the country, which appears to have been well known to the ancients. The plain to the east of the hilly region which these mountains form, is much more elevated than the level of the Ghor, on the west of the same mountains; in consequence of which, the hills appear with diminished importance as viewed from the eastern or upper plain. This plain terminates to the south by a steep rocky descent, at the base of which begins the desert of Nedjed. It is to a part of this upper plain, and to the mountains which constitute its western limit, that, as Burckhardt thinks, the name of Arabia Petræa, or the Stony, was given by the ancients; the denomination being however extended northward, so as to include the eastern plain with the mountains which form the eastern boundary of Palestine so far north as the river Jabbok. Speaking of this region, Burckhardt says, "It might well be called Petræa, not only on account of its rocky mountains, but also of the elevated plain, which is so covered with stones, especially flints, that it may with great propriety be called
desert, although susceptible of culture. 1
places it is overgrown with herbs; and m
have been thickly inhabited, for the traces
ruined towns and villages are met with on b
of the Hadj route between Maan and Akaba
as between Maan and the plains of the Hac
which direction there are many springs.
ent, all this country is desert, and Maan is
inhabited place in it." The mountains th
are described by the same traveller as ch
careous, with an occasional mixture of basa
mountainous region which they form, of co
fers from the plain which skirts it on the ea
climate is very pleasant. The air is pure ;
though the heat is very great in summer, th
ing breezes which then prevail, prevent the
ture from becoming suffocating. The winte
other hand, is very cold; deep snow falls
frosts sometimes continue to the end of Mar
mountainous country is adequately fertile, p
figs, pomegranates, apples, peaches, olives
and most European fruits. The region ha
all times noted for the salubrity of its air; a
hardt observes, there was no part of Syria
he saw so few invalids.

The mountains of Seir were in the first
occupied by a people called the Horim, or
who are mentioned in Gen. xiv., among tho
country was ravaged by Chedorlaomer and
These people are supposed to have taken t
from the chief or leader, who, with his trib
ily, first settled there, and whose name (H
served in the mountain, in this range,
Aaron died. The name "Seir" applied t

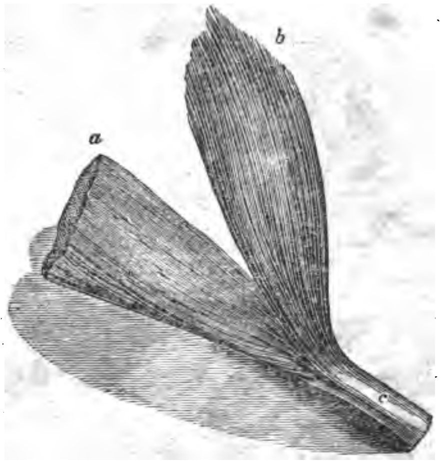
gion is doubtless derived from the chief of that name who is mentioned in v. 20, as the head of the family. The extent of territory occupied by the Horites cannot be very precisely ascertained; but there is no room to suppose that it reached so far south of the Dead sea, or spread so far west towards the Mediterranean as the "land of Edom" of after-times certainly did. The "land of Seir" of the patriarchal times, seems to have been immediately to the east and south of the Dead sea. In this land Esau settled himself permanently after the death of his father, and as his descendants increased, they were enabled to extirpate the original inhabitants, and occupied the land in their stead (Deut. ii, 12, 22). The country then took the name of the "land of Edom"—a denomination which appears to have extended with the progressive extension of the Edomite power, which in its palmy state extended along the eastern frontier of Palestine, from the parallel of the lake of Tiberias, and reached southward to the shore of the Arabian gulf; while in another direction it comprehended the country to the south of Palestine, from the mountains of Seir to the Mediterranean; and during the Babylonish captivity of the Jews, the Edomites encroached upon the south of Judah so far as Hebron which became their capital.

THE HUMAN BODY—No. IV.

We next come to a tissue widely different in every one of those circumstances, a tissue consisting of a new kind of animal matter, and endowed with a property not only peculiar to itself, but proper to living substance, and characteristick of a high degree of vital power. MUSCULAR TISSUE, the fourth distinct form of animal matter, commonly known under the name of flesh, is a substance resembling no other in nature. It consists of a soft and pulpy substance, having little cohesive power, arranged into fibres which are distinctly visible to the naked eye, and which are disposed in a regular and uniform manner, being placed close and parallel to each other. These fibres are every where pretty uniformly the same in shape, size, and general appearance, being delicate, soft, flattened, and though consisting only of a tender pulp, still solid. When examined under the microscope, fibres, which to the naked eye appear to be single threads, are seen to divide successively into smaller threads, the minutest or the ultimate division not exceeding, as is supposed, the forty thousandth part of an inch in diameter. On the other hand, the fibres which are large enough to be visible to the naked eye, are obviously aggregated into bundles of different magnitude, in different muscles, but always of the same uniform size in the same muscle.

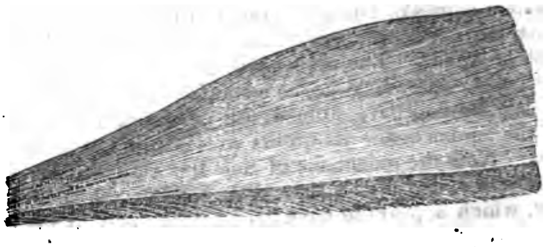


[Portion of a muscle; showing (a) the muscular fibres and their parallel direction; and (b) the termination of the fibres in tendon.]



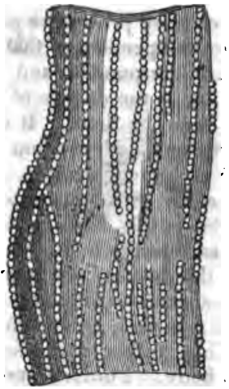
[Two portions of muscle; one of which, a, is covered with membrane; the other, b is uncovered; c. the muscular fibres terminating in tendon.]

The ultimate thread, or the minutest division of which the muscular fibre is susceptible, is called a filament; the smallest thread which can be distinguished by the naked eye is termed a fibre; and the bundle which is formed by the union of fibres is denominated a fasciculus. The proper muscular substance is thus arranged into three distinct forms progressively increasing in size—the filament, the fibre, and fasciculus: these as well as the muscle itself are formed by the aggregation of fasciculi, and inclosed each in its own distinct sheath of cellular membrane a.



[Portion of a muscle enclosed in a sheath of fascia or aponeurosis.]

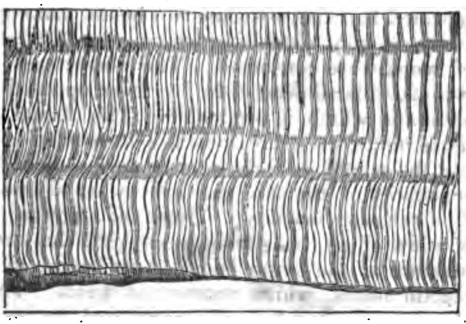
The composition of the ultimate filament has been very carefully examined by many distinguished physiologists with microscopes of high magnifying power. Under some of these microscopes the filament appears to consist of a series of rounded particles or globules of the same size as the particles of the blood when deprived of their colouring matter, so that it looks like a string of pearls, each globule being commonly stated to be about the two thousandth part of an inch in diameter. But it is now pretty generally agreed that this globular appearance of the ultimate muscular fibre vanishes under the more improved microscopes of the present day, and, as viewed by the latter, appears as a peculiar pulpy substance arranged into threads of extreme minuteness, placed close and parallel to each other, intersected by a



[Ultimate fibres of muscle, very greatly magnified; showing the strings of globules of which they are supposed by some to consist.]

great number of delicate lines passing transversely across the muscular threads.

With the exception of the organs of sense, the muscular tissue is more abundantly supplied with arteries, veins, and nerves, than any other substance of the body. Every ultimate thread or filament appears to be provided with the ultimate branch of an artery, vein, and nerve. These vessels are seen ramifying on the surface of the delicate web of membrane that incloses the pulp, but cannot be traced into it.



[The appearance of the ultimate muscular fibres and of their transverse lines, as seen under the microscope of Mr. Lister, when the object is magnified five hundred diameters.]

The proximate principle of which the muscular pulp is composed is fibrin. From the pulp, when inclosed in its sheath of membrane, albumen, gelly, various salts, and a peculiar animal extract called osmazome, are also obtained; but these substances are probably derived from the membranous, not the muscular, matter. Fibrin contains a larger proportion of azote, the element peculiar to the animal body, and by the possession of which its chymical composition is distinguished from that of the vegetable, than any other animal substance.

Muscular tissue possesses a slight degree of cohesion, a high degree of flexibility and extensibility, but no degree of elasticity; for although muscle, considered as a compound of muscular substance and membrane, be highly elastick, yet this property is probably altogether owing to the membranous matter in which it is enveloped. Its peculiar and distinctive property is vital, not physical, and consists in the power of diminishing its length, or of contracting or shortening itself on the application of a stimulus. This property, which is termed contractility, is the great, if not the sole source of motion in the body. Without doubt, elasticity and gravity, under the generating and controlling power of contractility, aid in accomplishing various kinds of motion. Thus membranes, tendons, ligaments, cartilages, and bones, by their physical and mechanical properties, modify, economize, facilitate, concentrate, and direct the motive power generated by the pure muscular substance; but still the only real source of motion in the body is muscular tissue, and the only mode in which motion is generated is by contractility.

• ARCHITECT

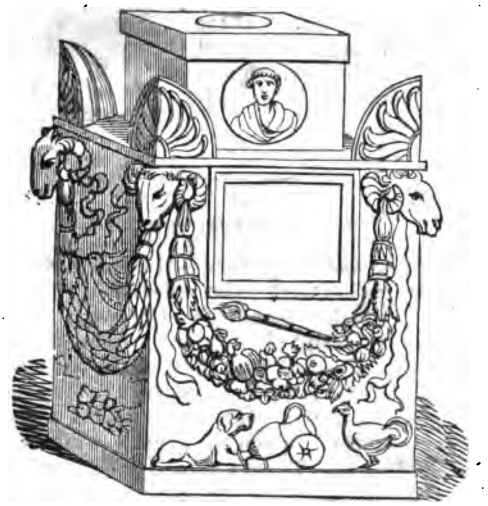
Persians and Caryatides.—
what are called the regular or
notice in the next place the
figures instead of columns for
tablature. We will first give
the account of Vitruvius. “
ponessus, took part with the
Grecian states. When the c
its invaders, the Greeks turn
the Caryans, and upon the e
the males to the sword, and
captivity. The architects of
pose of perpetuating the ign
instead of columns in the p
ings, substituted statues of th
copying their ornaments, and t
they were attired, the mode o
permitted to change.”

There are two great objecti
story: first, that the circumst
by any of the Grecian hist
that it is certain animal figu
this purpose long previous to
Vitruvius.

Having thus shown our re
origin of these figures, it mus
to inform them what *is*, or rat
able, and for this purpose we
kindness of Mr. Gwilt, the on
who has given a satisfactory
conjectures the name to have
ployment of them in temples
posed to have made the Lace
with the story of Carya (turn

Bacchus, who also transformed her sisters into stones,) and thence worshipped by them under the name of *Caryatis*. Thus, being first employed in temples dedicated to this goddess, they afterward came into use in other buildings as representations of the nymphs who assisted at the mysteries of the patron goddess. An example is given in the accompanying wood-cut of an older date, though the figure is much more beautifully formed.

The ancient cenotaph or tomb furnished some of the most beautiful displays of architectural ornament, executed either by the Greek or Roman sculptors. We furnish one erected to the memory of one of the Roman emperours.



The ornaments were all of a funeral character, and there is reason to suppose that the above cenotaph differed from many of a nearly similar character, inasmuch as it was intended to hold the remains, instead of being merely an honorary memento.

The ornaments, it will be seen, consist of heads supporting wreaths of flowers. Speaking of this species of ornament, Mr. Kempe observes in a late volume of the *Archæologia*, "garlands were so much used by the ancients at their sacrificial and social feasts, that as the patines for libation, and the sculls of victims, from being at first suspended on the friezes of their temples, became at last sculptured on them in stone, so were the vegetable wreaths at length transferred in a similar manner." We quote Mr. Kempe, as he is a good antiquary and a learned scholar; and there is but little doubt but that the greater part of the architectural ornaments of this character had their origin on altars and monuments, and were from thence transferred to the portico, frieze, and column of the temple.

ANIMAL HEAT.

Animal heat is that property of all animals by means of which they preserve a certain temperature, which is quite independent of that of the medium by which they are surrounded, and appears rather to be in proportion to the degree of sensibility and irritability possessed by them. It is greatest in birds. The more free and independent the animal is, the more uniform is its temperature. On this account, the human species preserves a temperature nearly equal, about 96—100° Fah., in the frozen regions at the pole, and beneath the equator; and on this account, too, the heat of the human body remains the same when exposed to the most extreme degrees of temperature; in fact, cold at first rather elevates, and extreme heat rather depresses the temperature of the human body. Fordyce and Blagden endured the temperature of an oven heated almost to redness, and two girls in France entered a baker's oven heated to 269° Fah., in which fruits were soon dried up, and water boiled. A Spaniard, Francisco Martinez by name, exhibited himself, a short time since at Paris, in a stove heated to 279° of Fah., and threw himself, immediately after, into cold water. Blagden was exposed in an oven to a heat of 257°, in which water boiled, though covered with oil. There is also a remarkable instance of a similar endurance of heat by the *convulsionnaires*, as they were called, upon the grave of St. Medardus, in France. A certificate signed by several eyewitnesses, among whom were Armand, Arouet, the brother of Voltaire and a Protestant nobleman from Perth, states that a woman named la Sonet, surnamed the *salamander*, lay upon a fire nine minutes at a time, which was repeated four times within two hours, making in all, thirty-six minutes, during which time fifteen sticks of wood were consumed. The correctness of the fact stated is allowed even by those opposed to the abuses in which it originated. The flames sometimes united over the woman, who seemed to sleep; and the whole miracle is to be attributed to the insensibility of the skin and nerves, occasioned by a fit of religious insanity. These facts are the results of a law of all living substances, viz., that the temperature of the living body cannot be raised above certain limits, which nature has fixed. There is also an increased flow of perspiration, by means of which the heat of the body is carried off. The extreme degrees of cold which are constantly endured by the human frame without injury are well known, and are to be explained only by this power in the living body to generate and preserve its own heat. The greater the irritability of individuals, whether from age, sex, or peculiarity of constitution, the greater the warmth of the body; it seems also to depend, in part upon the quickness of the circulation of the blood: thus children and small animals, whose circulation is lively, feel the cold least. The heat and the power of preserving it differ also in the different parts of the body; those appearing to be warmest in which there is the most copious supply of blood, as the brain, the head and neck, the lungs and central parts of the body. We see also, that when the irritability of the body, or of any part of it, is particularly increased, the heat of the part undergoes a similar change. Increased activity and motion of the body, as in walking, running, &c., and diseases of increased excitement, as fever and inflammation, produce a similar increase in the temperature of the body.

CHRISTIAN CONNEXION.

[It will be recollected that in our last volume we gave the "History of the Rise and Progress of the Episcopal Church in this country before the Revolution," by the Rev. Prof. Caswell, also some account of the Unitarians, and the Unitarian belief, being an extract from a tract by Rev. Orville Dewey. These articles were so well received, that we determined to go on, and have solicited members of different religious sects to furnish us with some account of the history of their respective churches. Among others, we applied to our highly esteemed friend, Mr. Badger, Editor of the Christian Palladium, of Union Mills, N. Y., for a history of the people called "Christians"—he referred us to Elder Millard, who has politely furnished us with the following article.

☞ When will our friends who have it in charge, supply us with a history of the Presbyterians, Baptists, Methodists, and Universalists? Eds. F. M.]

"Within less than half a century, a very considerable body of religionists have arisen in the United States, who, rejecting all *names*, *appellations*, and *badges* of distinctive party among the followers of Christ, simply call themselves CHRISTIANS. Sometimes speaking of themselves as a body, they use the term *Christian Connexion*. As this people have in many parts of our country become numerous, and as their origin and progress have been marked with some rather singular coincidents, this article will present a few of them in brief detail.

Most of the different Protestant sects owe their origin to some individual reformer either real, or pretended, such as a Luther, a Calvin, a Fox, or a Wesley. The Christians say they never had any such leader; that they do not owe their origin to the labours of any one man, or any particular set of men; that they arose nearly simultaneously in different sections of our country, remote from each other, without any preconcerted plan, or even knowledge of each others' movements in those different regions. After a lapse of several years, the three branches obtained some information of each other, and upon opening a correspondence, were surprised to find that without any material difference, they had all embraced the same principles, both in doctrine and practice, and were engaged in carrying forward the same system of reform. This singular coincidence is regarded by them as evidence that they are a people raised up by the immediate direction and overruling providence of God, and that the ground they have taken, is the one which will finally swallow up all party distinctions among sects, ultimately annihilate sectarism, and eventually establish the true Millenial church.

The American revolution which aimed a death blow at political domination, also, in some instances, diffused a spirit of liberty into the Church. The Methodists had spread to some considerable extent in the United States, especially south of the Potomack. They had previous to this time been considered a branch of the church of England, and their societies were dependent on English episcopacy for the regular administration of the ordinances. But as the revolution had wrested the states from British control, it also left the American Methodists free from the authority of the church of England, with the right of transacting their own affairs. Thomas Coke, Francis Asbury, and others, set about th work of establishing an Episcopal form of church government for the Methodists in America. Some of the preachers, however, had drank too deeply of the spirit of the times, to submit tamely to lordly power, whether in judicial vestments, or clad in the gown of a prelate. Their form of church government now became a subject of spirited discussion, in several successive conferences. James O'Kelly of North Carolina, and several other preachers of tha state, and of Virginia, plead for a *congregationa system;* that their conferences instead of being composed of ministers only, admit an equal delegation from the churches, and that the New Testament be their only creed, or discipline. The weight of influence however, turned on the side of episcopacy and a human creed; and Francis Asbury was elected and ordained bishop, Mr. O'Kelly, several other preachers and a large number of brethren, seceding from the dominant party. Their final separation from the Episcopal Methodists took place voluntarily at Manakin Town, N. C. December 25th, 1793. At first they took the name of "Republican Methodists," bu at a subsequent conference, resolved to be known as Christians only; to have no head over the church but Christ, and no creed, or discipline but the Bible At first they numbered in all about one thousand, but have since increased to many thousands. Such was the origin of the first branch.

Near the close of the eigthteenth century, Dr. Abner Jones of Hartland, in the state of Vermont, then a member of a regular Baptist church, had a peculiar travail of mind in relation to *sectarian names*, and *human creeds*. The first he regarded as an evil because they were so many badges of distinct separaation among the followers of Christ; and as God had raised up his people to sit *together*, these were causing them to sit *apart*. The *second* served as so many lines, or walls of separation to keep the disciples of Christ apart—that neither were of God but the inventions of men, and must ultimately perish with their using—that sectarian names and human creeds should be abandoned—that true piety alone and not the externals of it, should be made the only test of christian fellowship and communion—tha the holy scriptures are a sufficient written rule for faith and church government—that all the followers of Christ should be known simply as CHRISTIANS and that it was on these principles only, the true Millenial church could ever be established, or buil up.

Making the Bible the only source from whence he drew the doctrine he taught, Dr. Jones commenced propagating his sentiments with zeal, though at tha time he did not know of another individual who thought like himself. In September, 1800, he had the happiness of seeing a church of about twenty-five members, embracing these principles, gathered in Lyndon, Vt. In 1802, he gathered another church in Bradford, Vt., and in March, 1803, another in Piermont, N. H. About this time, Elias Smith, then a Baptist minister, was preaching with great success in Portsmouth, N. H. and had gathered a large church in that town. Falling in with Dr. Jones's views, the church under his care were led into the same principles. Up to this time Dr. Jones had laboured as a preacher nearly, if not quite single handed; but several preachers from the regular Baptists, and Freewil

Tierra del Fuego. Some of the ships anchored in two bays near the northern entrance, which they named Verschoor and Valentine, and are the same with the Port Mauritius of modern maps and the Bay of Good Success.

Although the whole fleet had passed through the strait just described on the evening of the second of February, yet, owing to contrary winds, they were on the fourteenth still seven leagues eastward of Cape Horn. The next day they doubled that promontory, and saw 'a great gulf between that cape and the cape next to the west,' which they were prevented from entering by bad weather. On the sixteenth Cape Horn lay to the eastward, and they discovered two islands, which, according to their reckoning, were distant to the westward fourteen or fifteen leagues. The following morning they perceived that they had lost ground, and fearing that they should still fall to leeward, they entered a large bay and cast anchor. In this harbour, which was afterward named Nassau bay, they remained ten days. On the twenty-third, some boats, which were sent to procure water, were compelled by a sudden and violent storm to return, leaving nineteen of the crew on shore wholly destitute of arms, of whom next day only two were found alive. The savages, it appeared, as soon as night came on, attacked them with clubs and slings, and killed all except the two, who had contrived to conceal themselves. Only five bodies were discovered, some of which were cut into quarters, and others strangely mangled. Not a single native was seen after this unfortunate event. A party which had been sent to examine the neighbouring coast, reported that Tierra del Fuego was divided into several islands; that without doubling Cape Horn a passage into the South sea might be effected, through the Bay or rather Gulf of Nassau, which was open to the east as well as to the west; and that through some of these numerous openings it was presumed ships might penetrate into the Strait of Magellan. Such parts of Tierra del Fuego as were seen appeared decidedly mountainous, though not wanting in many fine valleys and watered meadows. The hills were clad with trees, all of which were bent eastward, owing to the strong westerly winds which prevail in these parts. Spacious harbours, capable of sheltering the largest fleets, were frequently observed between the islands. The natives are described as differing little in stature from the people of Europe, and as being well proportioned in their limbs. Their hair is long, black, and thick, their teeth 'as sharp as the blade of a knife.' They paint their bodies of different colours and with fanciful devices; their natural complexion, however, seemed to be as fair as that of a European. Some of them were observed to have one side of their body altogether white, and the opposite entirely red; others were remarked with the trunks of their bodies white, and the face, arms, and legs coloured red. The males were perfectly naked; the females, who were painted like the men, wore only a little piece of skin about the waist, and a string of shells round their necks. Their huts were constructed of trees, in a conical form, having an opening at the top to let the smoke escape; the floor was sunk two or three feet below the level of the ground; and the sides of the walls were covered with earth. Their fishing-tackle consisted of lines, stone hooks, and harpoons, which were generally fabricated with some degree of neatness. For arms they had sharp knives made of stone; slings, bows, and arrows with stone heads; lances pointed with bone, and clubs. Their canoes measured in length from ten to sixteen feet, and about two in width; they were built of the bark of large trees, resembling in shape the gondolas of Venice. In regard to their manners and habits, the report is very unfavourable: they more resemble beasts than human beings; 'for besides that they tear men to pieces, and devour the flesh raw and bloody, there was not perceived among them the smallest indication of a religion or governmen': on the contrary, they live together like beasts.'

The inhabitants of Easter island are described as being of a well-proportioned stature, though rather slender, of complexions generally brown, but, in some instances, of European whiteness. They delineate on their bodies figures of birds and other animals; and a great proportion of the females were 'painted with a rouge, very bright, which much

[Man of Tierra del Fuego.]

[Woman of Easter Island.]

surpasses that known to us;' and had dresses of red and white cloth, soft to the touch like silk, with a small hat made of straw or rushes. They were generally of a mild disposition, with a soft and pleasing expression of countenance, and so timid, that when they brought presents to the voyagers they threw the gifts at their feet, and made a precipitate retreat. Their ears, as already noticed, were so elongated as to hang down to their shoulders, and were sometimes ornamented with large white rings of a globular form. Their huts were about fifty feet long and seven broad, built of a number of poles cemented with a fat earth or clay, and covered with the leaves of the palm-tree. They had earthen vessels for preparing their victuals, but possessed few other articles of furniture. No arms were perceived among them, and their sole defence from the cruel hostilities of their visiters appeared to be reposed in their idols. These were gigantick pillars of stone, having on the top the figure of a human head adorned with a crown or garland, formed of small stones inlaid with considerable skill. The names of two of these idols have been preserved—Taurico and Dago; and the Hollanders thought they perceived indications of a priesthood, the members of which were distinguished by their ponderous ear-rings, by having their heads shaven, and by wearing a bonnet of black and white feathers. The food of the inhabitants consisted entirely of the fruits of their land, which was carefully cultivated and divided into enclosures. No traces were found of a supreme chief or ruler, nor was any distinction of ranks observed, except that the aged bore staves, and had plumes on their heads, and that in families the oldest member appeared to exercise authority. It would be improper to pass without notice the fabulous account of the immense stature of the natives, given, in one of the accounts of the voyage, with the strongest protestations of its truth:—'All these savages are of more than gigantick size; for the men, being twice as tall and thick as the largest of our people, they measured, one with another, the height of twelve feet, so that we could easily—who will not wonder at it!—without stooping, have passed between the legs of these sons of Goliah. According to their height, so is their thickness, and all are, one with another, very well proportioned, so that each could have passed for a Hercules.' It is added, that the females do not altogether come up to these formidable dimensions, 'being commonly not above ten or eleven feet!'

From hence, he proceeded towards the south, inclining eastward, till, having passed Ambrym, Paoom, Apee, Monument, Three Hills, Shepherd's, Montagu, Hinchinbrook, and Sandwich Islands, he anchored on the third of August on the southeast side of Erromango. The treachery of the natives led to a skirmish, in which some of them lost their lives; and the following evening he sailed for the neighbouring Island of Tanna, where he found an anchorage on the fifth. The next day the ship was moored close to the shore, so as to afford to the landing-place and to the whole harbour the protection of her artillery. Some thousands of the inhabitants were drawn up on the beach, evidently with hostile intentions; but the discharge of a few guns speedily dispersed them, and the voyagers, though watched with strict jealousy, were allowed to explore the country in peace. The natives were considered as a distinct race from tl of Mallicollo or of Erromango; they were of middle size, rather slender, nimble and active, having for the most part good features and pleas countenances. They were found to possess t languages; the one, peculiar, it was understood, themselves and to the inhabitants of Erromango a Annatom, the other the same with that of the Ton group. Their complexion was very dark, their h for the most part black or brown, of considerat length, crisp and curly. 'They separate it,' w are told, 'into small locks, which they woold or cu round with the rind of a slender plant, down to abo an inch of the ends; and as the hair grows the wool ing is continued. Each of these cues or locks i somewhat thicher than common whip-cord; and the look like a parcel of small strings hanging down fron the crown of their heads.' They were armed witl clubs, spears or darts, bows and arrows, and staves, and wore bracelets of marine shells or cocoanuts, ear-rings of tortoise-shell, neck-laces and amulets of a greenish stone.

Man of the Island of Tanna.

Having taken in a large supply of wood and water, Cook made sail on the twentieth with a fresh breeze, and stretched to the south; but, seeing no more land in that direction, he altered his course and steered north-northwest along the eastern shores of Tanna, Erromango, Sandwich, and Mallicollo. The night of the twenty-third found him in Bougainville's Passage; and on the twenty-fifth he entered a large and spacious harbour, which he was convinced was that named by Quiros San Felipe y Santiago. The port of La Vera Cruz was recognised in the anchorage at the head of the bay, one of the two rivers mentioned by the Spaniards was visited, 'and, if we were not deceived,' says Cook, 'we saw the other. . . . An uncommonly luxuriant vegetation was every where to be seen; the sides of the hills were checkered with plantations, and every valley watered by a stream. The columns of smoke we saw by day, and the fires by night all over the country, led us to believe that it is well inhabited and very fertile.' By the thirty-first he had circumnavigated the island, which proved to be the largest and most western of the cluster; it was sixty leagues in circuit, and the name of Tierra del Espiritu Santo was given to this, 'the only remains of Quiros's continent.' The survey being now completed, the group was found to extend from latitude 14° 29′ to 20° 4′ S., and from longitude 166° 41′ to 170° 21′ E., 125 leagues in the direction of north-northwest half west, and south-southeast half east. 'As, besides ascertaining the extent and situation of these islands,' he remarks, 'we added to them several new ones, and explored the whole, I think we have obtained the right to name them, and shall in future distinguish them by the name of the New Hebrides.'

Having spent more than forty days in examining this archipelago, he made sail from it on the first of September, and with a steady wind stood to the southwest. On the fourth he came in sight of an extensive coast beset with reefs, on which the sea broke with great violence. A passage through this dangerous barrier having been discovered, he came to anchor on the 5th, when his ship was immediately surrounded by a great number of natives in sixteen or eighteen canoes. They were of a peaceable and friendly disposition, and offered no opposition to a landing, which was effected in the afternoon. The country much resembled some parts of New Holland; the hills and uplands were rocky, and incapable of cultivation; the thin soil which covered them being scorched and burnt; and, 'indeed,' we are informed, 'were it not for some fertile spots on the plains, and a few on the sides of the mountains, the whole country might be called a dreary waste.' The natives were robust and well made, in colour nearly approaching those of Tanna, but surpassing them in stature, and having finer features and more agreeable countenances. Their language appeared to have many words in common with that used in New Zealand, in the Tonga islands, and in Tanna. In affability and honesty, they excelled the people of any place yet visited.

On the thirteenth Cook quitted his anchorage, and for two days sailed to the northwest, when, finding a termination to the land in that direction, and a reef extending as far as the eye could reach, he altered his course to the southeast, and again came in sight of the coast on the seventeenth. He ran rapidly along it, and on the twenty-third reached its southeastern extremity, which was called Queen Charlotte's Foreland. In attempting to get round this point, some islands were discovered stretching in the same direction as the mainland; the largest received the name of Isle of Pines, while the designation of Botany was conferred upon one on which a party landed. The whole of this survey was attended with the greatest danger; and, considering the vast extent of sea yet to be investigated, the state of his vessel and her crew, and the near approach of summer, our navigator, to use his own expression, was obliged, 'as it were by necessity, *for the first time*, to leave a coast he had discovered before it was fully explored.' He gave it the appellation of New Caledonia, and fixed its position between latitude 19° 37′ and 22° 30′ S., and west longitude 163° 37′ and 167° 14′. With the exception of New Zealand, it exceeds in size all the islands of the Austral ocean, extending in length about eighty-seven leagues, though nowhere more than ten in breadth.

He lost sight of land on the first of October, and pursued his course to the south till the morning of the tenth, when, in latitude 29° 2′ 30″ S., longitude 168° 16′ E., he discovered an island to which the name of Norfolk was applied. It was of considerable height and about five leagues in circuit, fertile and luxuriantly wooded, but uninhabited, and our voyagers were, perhaps, the first that ever set foot upon its shores.

[Man of New Zealand.]

On the seventeenth they came in sight of New Zealand, and could distinguish the summit of Mount Egmont, 'covered with everlasting snow.' The next day they anchored in Queen Charlotte's sound, for the third time, nearly eleven months after their former visit. Immediately on landing they looked for a bottle, containing a memorandum which had been left for Captain Furneaux. It was removed, and circumstances soon occurred which showed that the Adventure had been here; while, from conversing with the natives, of whom only a few appeared, and those in a state of unusual timidity, it was inferred that some calamity had befallen her crew.

On the tenth of November, Cook departed from New Zealand, and with all sails set steered south by east, to get into the latitude of 54° or 55° S., with the view of crossing the Pacific nearly in these parallels, and thus exploring those parts left unnavigated in the previous summer. On the twenty-seventh he was in latitute 55° 6′ and longitude 138° 56′ W., when, abandoning all hope of finding land, he determined to steer directly for the western mouth of the Straits of Magellan, which he reached on the eighteenth of December. With the exception of that achieved by his colleague, of which he was then ignorant, this was the first run directly across the Pacific in a high southern latitude. 'And I must observe,' he writes, 'that I never made a passage any where of such length, or even much shorter, where so few interesting circumstances occurred; for, if I except the variation of the compass, I know of nothing else worth notice. . . . . . I have now done with the Southern Pacific ocean, and flatter myself that no one will think that I have left it unexplored; or that more could have been done in one voyage, toward obtaining that end, than has been done in this.'

FARMERS' DEPARTMENT.

TILLAGE.

Improvement in tillage may truly be said to be the basis, or real foundation on which the successful introduction of all the new articles of field-culture depends. When the ground is well tilled, it is in the most perfect condition for receiving the fertilizing principles of the atmosphere. Rain, snow, hail, dews, and hoarfrost, &c. convey the nutriment of vegetation, which floats in the air most plentifully into the bosom of the earth, as deep as it has been broken and well pulverized. It is the only effectual means of rooting out weeds, so necessary to the beneficial growth of all crops, and should be repeated till they are in a great measure destroyed. The roots and fibres of weeds are the ligaments and braces which in a great measure knit and bend the clods together, and are indissoluble, till by being exposed to the action of the air, the roots within rot and decay, and the clods, almost by their own gravity, expand into small crumbles and are reduced to a perfect state of pulverization.

The destroying of weeds, however, is not the only immediate benefit accruing from a due state of tillage; grubs, beetles, worms and maggots of many diferent kinds, which abound in most fields, may be generally diminished, if not extirpated by the well timed use of the plough, and its auxiliary necessary to the reduction of the soil. Nothing so effectually prevents the ravages of the several tribes of subterranean insects, as the frequent stirring and crumbling of the ground. Large patches of several poles square, in a field of beans, are frequently destroyed by the grub or cockchaffer; and many hundreds of cabbage-plants by a kind of gray grub of less size. Both these execute their mischief under ground. They first eat the roots of the beans, even when in kid, when they wither, fall and die; and the latter bites off the plant just under the surface. Tillage, duly performed always destroys the whole race.

The improvement the soil acquires by means of frequent and well timed tillage, is gradual and progressive, and the longer it is kept in tillage, if duly performed, the more fertile it becomes. One ploughing in the beginning of winter, and a second early in the spring, will be more effectual in pulverizing the soil than half a dozen at any other time of the year. This improvement in tillage is so very clear and certain, that it surprises one much that it is not universally practised. Farmers' Cabinet.

BRIEF HINTS FOR AUTUMN WORK.

Select seed wheat from that which grew in the most productive parts of the field—endeavour to obtain the largest seed, and sow none other—this if practiced in yearly succession, will greatly improve the variety.

Sow none but clean seed—for farmers may as well raise wheat as to raise weeds.

Chess may be separated from seed wheat by a good fanning-mill. It may also by using brine—if the brine is too strong, so that good plump wheat will not sink in it, dilute it with water until it will; and the chess and light imperfect grains will float, and may be skimmed off. Then empty the wheat into a basket set on a tub or barrel, and the brine will run through into it for further use. Both these methods of cleaning wheat may be combined to advantage.

Picking the largest heads by hand, is a slow but very thorough way, and more particularly beneficial where crops are sown expressly for seed.

Smut in wheat crops is perpetuated by the dust of the smut adhering to the seed. It may be prevented by steeping the seed twenty-four hours in lie or a mixture of fresh lime and water made of half a pound of the former to one gallon of the latter. This is certain prevention. Care should be taken that seed is not rendered foul by putting it in smutty bags, or those where smutty wheat has been kept.

The quantity of wheat sowed to the acre should be from five pecks to two bushels, varying with the time of sowing, and with the size of the grains of seed. Early sown wheat should be in less quantity than late; and wheat with small grains should be in less quantity than large, because there are more of them to a bushel.

Wheat sown about the time or after the first frost will escape in a great measure the Hessian fly. Where the fly is not destructive it should be sown early.

Furrow drains should be cut by passing the plough three or four times through the same furrow, and they should be made through all low parts of the field. They should be well cleared of loose earth by means of a shovel or hoe, so as to admit the surface water in wet seasons to pass freely off.

Corn should always be *cut up*, that is, cut off near the surface of the ground, and not *topped*, or cut off above the ears. The former is more expeditious, it saves twice as much fodder, and is attended with a better crop of corn, as it is always diminished considerably by topping. This has been proved by repeated experiments, where the crops were *measured*.

Seed corn should be always selected in autumn—take such for this purpose as have the greatest number of ears to a stalk.

Hogs to be fattened may be turned into apple orchards to pick up falling apples. They will fatten on them as well as on corn, if they have a plenty of them.

Grain fed to hogs should always, if possible, be first ground to meal.

Considerable advantage is derived from feeding *cooked* food (steamed or boiled) to hogs, and it should always be practised when the number is sufficient to warrant the erection of proper apparatus for it.

Cooked food for fattening cattle is of little advantage, and commonly not worth the trouble.

Advantage is generally derived from using *mixed* food for domestick animals.

Straw may always be of great use to the farmer in many ways, and is well worth preserving. The following method of securing it is given by a correspondent of the Genesse Farmer. "Previous to thrashing I go to a hay-stack, and twist a quantity of bands, from six to ten feet long, which are placed at the barn door, and when the straw is taken to the door, two men take a band and stretch it over the bundle of straw, then run each a hand under it, and turn it over endwise, when one of them fastens the band, and the other prepares another band. In that manner two men will bind as fast as the swiftest machine will thrash, and the straw is stacked as securely as wheat, and in one fourth of the time required when not bound." When wanted it may be afterward removed with far less labour than when stacked without binding.

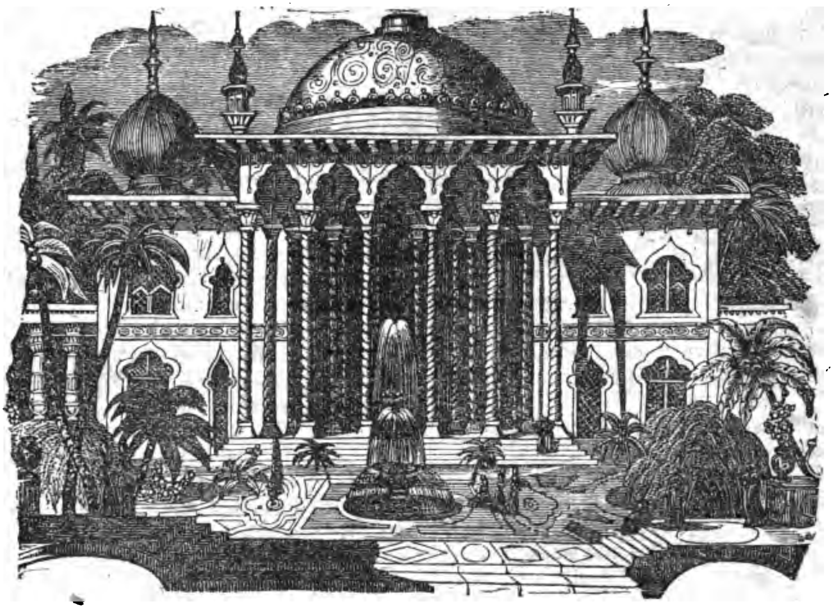
Strawberries may be transplanted with advantage, in the early part of autumn.

Fruit-trees may be removed and transplanted after the first of October. Most farmers who transplant fruit-trees, suffer a great loss by not doing the work *well*. The principal care needed is, *first*, to dig the holes large, say six feet across, and fifteen or eighteen inches deep; *secondly*, to preserve, carefully, the roots as entire and uninjured as possible, and not to suffer them to become dry out of the ground; and *thirdly*, to fill the hole with finely pulverized, rich earth, (not manure,) shaking it in, in small quantities, and packing it closely but gently about the roots so as to leave them in their natural position in the soil. The whole expense of this, would not be more than half the price of the tree, and in five years it would be three times the size which it would be if transplanted by the common way of digging small holes and doing the work hastily and imperfectly.

Genesee Farmer.

PERSIAN GARDENS.

In the south part of the city of Ispahan, is to be seen the famous tract called Shaherbag, which bears a great resemblance to Versailles. It consists of a series of gardens, inclosed within four majestick walls: each garden has a separate palace adapted to the seasons, or to the changing humour of the royal planter, who called them Hesht Beheste, or the "Eight Paradises." The prevailing plan of them all is that of long parallel walks, shaded by even rows of tall umbrageous planes, the celebrated chenar trees, of which the Persians are extremely fond, and which grow here in perfection. These are interspersed with a variety of fruit-trees, and all kinds of flowering shrubs. Canals flow down the avenues in straight lines, and generally terminate in a large marble basin, ornamented with sparkling fountains of square or octagon shapes. The great number of avenues and canals, and the numbers of rills which are seen from any one point, have an uncommonly magnificent effect, and the different palaces belonging to the eight paradises are descried at different openings; glittering like so many gay pavilions. The traveller now mentioned, however, on drawing nearer, was less pleased with the architectural taste displayed in their structures. He found them gorgeous, but heavy and discordant, though loaded with every species of external ornament, in gilding, carving, painting, and inlaid mirror-glass. This was particularly the case with the Shehel Setoon, or Palace of Forty Pillars, the favourite residence of the latter Sophi kings. The exhaustless profusion of its splendid materials reflecting their own golden or crystal lights on each other, along with all the variegated colours of the garden, gave the appearance of an entire surface formed of polished silver and mother-of-pearl set with precious stones, a scene well fitted for a an eastern poet's dream, or some magick vision in the tales of an Arabian night. The front is entirely open to the garden, and it is sustained by a double range of columns, upward of forty feet high, each column shooting up from the united backs of four lions of white marble, and the shafts covered with arabesque patterns, and foliages in looking-glass, gilding and painting; some twisting spirally, others winding in golden wreaths, or running into lozenges, stars, connecting circles, and many intricacies of fancy and ingenious workmanship. The ceiling is equally ornamented, particularly with the figures of all sorts of animals, from insects to the large quadrupeds. At some distance within the front is the entrance to a vast interiour saloon, in which all the caprice and cost of eastern



[Persian Gardens.]

magnificence are incredibly lavished. The floors of both apartments are covered with the richest carpets of the age of Shah-Abbas, but as fresh as if just laid down, a proof of the excellence of the dye, though some ascribe this and all similar phenomena, without any meaning, to the purity of the climate. So far as this cause is concerned, the only property of the atmosphere is the absence of dampness. A door in one angle of this saloon opens into a spacious and lofty banqueting hall, the sides of which are hung with pictures, mostly descriptive of convivial scenes, similar representations being also emblazoned on the doors and pannels of the room near the floor. Its lower range is spotted with little recesses taking the shapes of bottles, flagons, and other vessels indispensable in those days at a Persian feast, though of a character equally different from the abstemiousness that marked the board of the great Cyrus, and from the temperance which at the present moment presides at the Persian court. Sir R. K. Porter gives an interesting account of the subjects and execution of six large pictures, four of which represent royal entertainments given to different ambassadors in the reign of Shah-Abbas, and two are battle pieces; these are, in general, ill-imagined in point of taste, but excuted with great nicety and observation. The Hall of audience exhibits a profusion of very recent paintings, among which are several of the king, but wretched likenesses, and altogether they betray a decline of this fine art in Persia, while a similar comparison of the ornamented work shows that considerable progress in that department has been made. The river Zenderood, which divides the Shaherbag in two, has a beautiful bridge of hewn stone and brick, composed of thirty-six arches, with a gallery on each side, covered by a terrace, commanding a delightful view of the surrounding gardens, and the suburb of Julpha, situated on the margin of the river, though now in ruins. A little lower is another magnificent bridge built by Shah-Abbas, with wider galleries, and a hexagonal circuit of buildings in the centre. Under the arches, the bottom of the river is so paved as to make the water fall in the form of a cascade, which is in full view of a fine palace built directly opposite and surrounded with beautiful gardens. That these bridges might have a sufficient river flowing beneath them, Shah-Abbas introduced into the bed of the Zenderood, another river, at a distance of eighty miles from Ispahan, by cutting a passage through some mountains at a great expense. Chardin describes the size of the river as equalling in spring that of the Seine at Paris in winter.

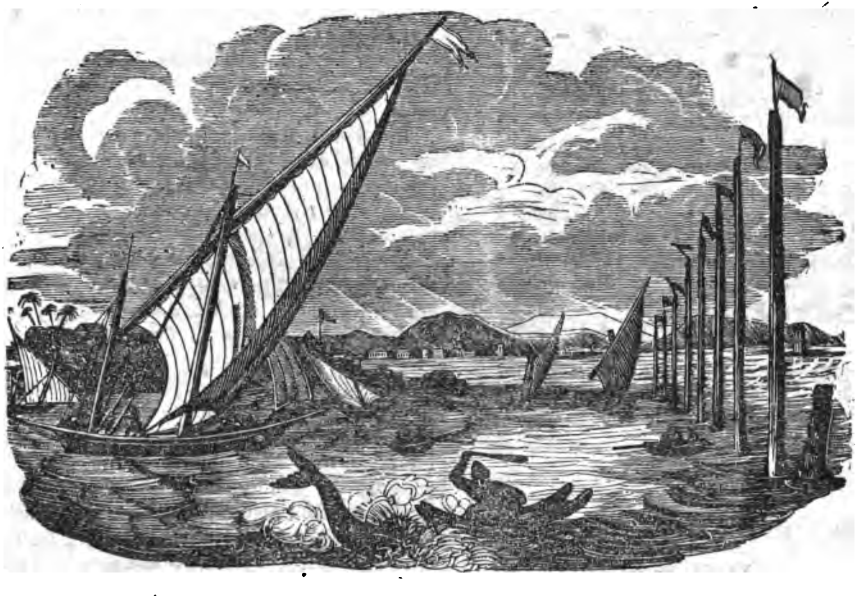
BOMBAY.

Bombay, a city of Hindostan, is situated on an island of the same name, on the coast of Aurungabad, and connected with the main land by a causeway constructed in 1805. This city is one of the three presidencies of the English East India Company. It has a strong fort, a dock yard, and marine arsenal. The finest merchant-ships are built here, all of teak.

Bombay commands the trade of the NW. coast of India and the Persian Gulf. At this place was the first missionary station established by the American Board of Commissioners for Foreign Missions in 1813.

The view of the bay from the fort is beautiful. Bombay is a barren rock, unfit for agriculture; but it possesses great advantages for trade and for shipbuilding. Their ships are mostly constructed by a class of people called Parsees, who are worshippers of fire. They were originally driven from Persia by the Arabians. In the morning and evening, they pay their devotions to the sun.

The number of inhabitants in Bombay is supposed to exceed two hundred thousand. The town has a very flourishing commerce. The accompanying view represents a part of the harbor of Bombay where boats can enter.



[Boat Entrance to the Harbor of Bombay.]

SITTINGS OF CONGRESS.

Statement showing the commencement and termination of each session of Congress held under the present constitution, with the nuumber of days in each:

CONGRESS.	SESSION.	FROM	TO	YEAR OF INDEPENDENCE.	NO. OF DAYS IN EACH SESSION.	WHERE HELD.	PRESIDENTS.
I.	1	Mar. 4, 1789	Sept. 29, 1789	13	210	N. Y.	George Washington.
	2	Jan. 4, 1790	Aug. 12, 1790	14	221	do.	
	3	Dec. 6, 1790	Mar. 3, 1791	15	88	Phil.	
II.	1	Oct. 24, 1791	May 8, 1792	16	98	do.	
	2	Nov. 5, 1792	Mar. 2, 1793	17	119	do.	
III.	1	Dec. 2, 1793	June 9, 1794	17	190	do.	
	2	Nov. 3, 1794	Mar. 3, 1795	19	121	do.	
IV.	1	Dec. 7, 1795	June 1, 1796	20	178	do.	
	2	Dec. 5, 1796	Mar. 3, 1797	21	89	do.	
V.	1	May 15, 1797	July 10, 1797	21	57	do.	J. Adams.
	2	Nov. 13, 1797	July 16, 1798	22	246	do.	
	3	Dec. 3, 1798	Mar. 3, 1799	23	90	do.	
VI.	1	Dec. 2, 1799	May 14, 1800	24	165	do.	
	2	Nov. 17, 1800	Mar. 3, 1801	25	107	Wash.	Thomas Jefferson.
VII.	1	Dec. 7, 1801	May 3, 1802	26	148	do.	
	2	Dec. 6, 1802	Mar. 3, 1803	27	88	do.	
VIII.	1	Oct. 17, 1803	Mar. 27, 1804	28	163	do.	
	2	Nov. 5, 1804	Mar. 3, 1805	29	119	do.	
IX.	1	Dec. 2, 1805	April 21, 1806	30	141	do.	
	2	Dec. 1, 1806	Mar. 3, 1807	31	92	do.	
X.	1	Oct. 26, 1807	April 25, 1806	32	183	do.	
	2	Nov. 7, 1808	Mar. 3, 1809	33	117	do.	
XI.	1	May 22, 1809	June 28, 1809	33	38	do.	James Madison.
	2	Nov. 27, 1809	May 1, 1810	34	156	do.	
	3	Dec. 3, 1810	Mar. 3, 1811	35	91	do.	
XII.	1	Nov. 4, 1811	July 6, 1812	36	246	do.	
	2	Nov. 2, 1812	Mar. 3, 1813	37	122	do.	
XIII.	1	May 24, 1813	Aug. 2, 1813	37	71	do.	
	2	Dec. 6, 1813	April 18, 1814	38	134	do.	
	3	Sept. 19, 1814	Mar. 3, 1815	39	166	do.	
XIV.	1	Dec. 4, 1815	April 30, 1816	40	149	do.	
	2	Dec. 2, 1816	Mar. 3, 1817	41	92	do.	
XV.	1	Dec. 1, 1817	April 30, 1818	42	141	do.	James Monroe.
	2	Nov. 16, 1818	Mar. 3, 1819	43	108	do.	
XVI.	1	Dec. 6, 1819	May 15, 1820	44	162	do.	
	2	Nov. 13, 1820	Mar. 3, 1821	45	111	do.	
XVII.	1	Dec 3, 1821	May 8, 1822	46	157	do.	
	2	Dec. 2, 1822	Mar. 3, 1823	47	92	do.	
XVIII.	1	Dec. 1, 1823	May 27, 1824	48	179	do.	
	2	Dec. 6, 1824	Mar. 3, 1825	49	88	do.	
XIX.	1	Dec. 5, 1825	May 22, 1826	50	169	do.	J. Q. Adams.
	2	Dec. 4, 1826	Mar. 3, 1827	51	90	do.	
XX.	1	Dec. 3, 1827	May 26, 1828	52	176	do.	
	2	Dec. 1, 1828	Mar. 3, 1829	53	93	do.	
XXI.	1	Dec. 7, 1829	Mar. 31, 1830	54	176	do.	Andrew Jackson.
	2	Dec. 6, 1830	Mar. 3, 1831	55	88	do.	
XXII.	1	Dec. 5, 1831	July 16, 1832	56	225	do.	
	2	Dec. 3, 1832	Mar. 3, 1833	57	91	do.	
XXIII.	1	Dec. 2, 1833	June 30, 1834	58	211	do.	
	2	Dec. 1, 1834	Mar. 3, 1835	59	93	do.	
XXIV.	1	Dec. 7, 1835	July 4, 1836	60	211	do.	
	2	Dec. 5, 1836	Mar. 3, 1837	61	89	do.	

Nat. Intelligencer.

COMPARATIVE STATISTICS.

PITTSBURGH, CINCINNATI, AND LOUISVILLE.

The great supports of a city are agriculture, manufactures, commerce, and educational institutions.

In respect to agriculture, there is no comparison between the western cities; that of Cincinnatti being so far superiour. The agricultural resources of the Miami and White-water vallies, with the extensive region adjoining, being unsurpassed by any portion of the United States. This fact is known by the great exports of pork, flour, and whiskey, from Cincinnati and the adjacent streams. Pittsburgh and Louisville enter into no particular enumeration of their exports: while, however, the former is willing to make a specification of her manufactures, and the latter of the goods she sells.

Cincinnati exports eight millions of produce and manufactures, and will soon double that.

Of manufactures, Pittsburgh claims to be the great seat in the West. But, we confess ourselves surprised to find how closely Cincinnati treads on her heels. Pittsburgh claims to manufacture fifteen millions per annum—including six millions of "other manufactures."—Cincinnati claims, and proves, by specifick enumeration, near thirteen millions. The difference is not very great. Of the Pittsburgh manufactures four millions are made up of the single item of "rolling mills," and near a million more of "glass works;" while Cincinnati has but one rolling mill within herself, and no glass works. Taking these out, and the Cincinnati manufactures are much the greatest. In fact, the variety, amount, and distribution of manufactures in Cincinnati is, for a new country, curious. Of commerce—meaning by that term the distribution of goods merely, Louisville claims and shows the greatest amount. This follows of course, from her position at the falls of the Ohio, and from being the only commercial town of any consequence, in Kentucky.

Of export commerce, we have already stated, Cincinnati has much the most.

In educational institutions, as well as agricultural advantages, Cincinnati greatly predominates. In truth, she has a fair prospect of excelling, in this respect, any city of the United States. With the greatest advantages, in agricultural resources, institutions, and in the variety of her mechanical industry, Cincinnati will retain her position and character of the "Queen City of the West." She will wie d the empire of mind, as long as mind shall be respected in the valley of the Ohio.

Pittsburgh will always be a flourishing city. Seated at the head of a mighty navigation, at the foot of the great Apalachian slope, with coal hills all around her, she will remain mistress of these "who work in metals."

Louisville, placed at the falls of the Ohio, and the commercial mart of Kentucky, will always possess advantages for the distriubtion of goods. She will always continue to flourish while there is any obstruction at the falls, or any vigour within herself.

These three young and vigorous cities are not rivals. Nature has forbidden their rivalship; she has placed them where there is no interference of interests, and there should be no mean jealousy of superiority. They have grown up together, like three beautiful sisters, and now they should be like those sisters, when married and separated to distant homes, hearing of each other's prosperity with yearning hearts, and seeking mutual intercourse with the strength of early affection.

Cincinnati Chronicle.

USEFUL KNOWLEDGE.

Fire proof Wood.—Doctor Fuchs, member of the Academy of Science at Munich, has discovered a composition by which he renders wood incombustible; the composition is made of granulated earth and an alkali. To obtain it the inventor says, you must dissolve some moist gravelly earth, which has been previously well washed, and cleared from any heterogeneous matter, in a solution of caustick alkali. This mixture has the property of not becoming decomposed by fire or water. When spread upon wood, it forms a vitreous coat, and is proof against the two elements. The building committee of the royal theatre have twice publickly tried the composition on two small buildings of six or eight feet in length, and a proportionate height; the one was covered with the composition, and the other built in the usual manner. The fire was put equally in the two buildings; the one which was not covered with the composition was consumed, while the other remained perfect and entire. The cost of this process is very insignificant compared to its great utility, being about two francs three centimes per 100 square feet. The royal theatre at Munich has undergone this process, having about 400,000 square feet; the expense of which was about 4 or 5000 francs.

Cement for Iron Pipes.—For what is termed flanged joints, and all such as are not required to be taken apart, use an iron cement made of iron boring, pounded sal ammoniac and one quarter of sulphur. The exact proportion, however can only be ascertained from practice. This composition should be wetted with water or urine, and driven into the joint with a hammer and caulking chisel; it will then be found the most durable of all joints, if well made, and will resist steam of any pressure. If the joints are required to be taken asunder frequently, this cement will not of course, be so convenient, and in such cases a platted rope or gaskin, with some glazier's putty, or white and red lead, will answer every purpose.

Damp Walls.—A hall, of which the walls were constantly damp, though every means were employed to keep them dry, was intended to be pulled down, when M. Schmitthals recommended, as a last resource, that the walls should be washed with sulphurick acid. It was done, and the deliquescent salts being decomposed by the acid, the walls dried, and the hall was afterwards free from dampness.

Preparation of Quills.—M. Schloz, of Vienna, gives the following process for preparing quills for making pens, which it is said, will render them more durable, and better than the best Hamburgh quills:—A boiler is to be about one-fourth part filled with water, and the quills suspended in a perpendicular position over the surface of the water, with their tails downwards, so that the extremity of the tail is not below the surface of the water. The boiler is then to be covered with a close cover, and kept boiling four hours. The next day, after having cleared the quills of roughness, and rubbed them with a piece of woollen cloth, let them be exposed to a moderate degree of heat; and on the following day they will be found hard and transparent, and without the defect of splitting too freely.

Preparing Drawing Paper.—Reduce to a powder, and dissolve quickly in a glazed earthen vessel, containing cold water, some gum adragant having been well worked with a wooden spatula to free it from lumps. There must be a sufficient quantity of water to give to this diluted gum the consistence of a jelly. Paper, and some sorts of stuffs, upon which, if this composition be smoothly applied with a pencil, or a brush, and dried before a gentle fire, will receive either water or oil colours; in using water colours, they must be mixed with a solution of the above gum. This cloth, or paper, so prepared, will take any colour except ink. When it is intended to retouch any particular part of the drawing, it should be washed with a sponge, or clean linen, or a pencil, containing some of the above mentioned liquid; if the part is only small, it will then rise quickly, and appear as if repainted.

Glazing Earthenware.—M. Rochinski, a manufacturer of earthenware at Berlin, has found a varnish or glazing for common pottery, which, after trials made in the presence of the College of Medicine, offers no danger in regard to health, and resists the action of the acids. This glazing is composed of five parts of litharge, two parts of well purified clay, and one part of sulphur. These substances are pulverised, and mixed with a sufficient quantity of caustick alkaline lye (soap makers' liqour,) so as to form a mixture fit to be readily applied on the earthenware, and to cover it equally all over. Carefully baked, these wares offer no trace of lead.

To preserve Meat.—There are several patent processes for preserving meat, and other solid and fluid bodies; but the one generally resorted, to consists in boiling them to exclude the air and then hermetically sealing the cases in which they are enclosed. The editor of this work has opened one case of cream which had by that means been successfully preserved for eleven years.

The last patent for this purpose was enrolled by Mr. Currie, and the object of the patentee is to prevent the decomposition of vegetable and animal substances by removing the oxygen of the atmosphere from them, and substituting in its place an atmosphere of carbonick acid gas.

The substances to be preserved, whether vegetable or animal, are to be placed in close receptacles, such as vaults and tanks; the atmospherick air is then to be extracted from such receptacles, and carbonick acid gas introduced, which being heavy will readily insinuate itself into every cavity of the vessel and rest upon the top of the goods deposited therein, and by that means prevent the re-entry of atmospherick air containing oxygen, in the absence of which the decomposition of these substances could not take place.

Bene Plant.—A few leaves of the plant when green, plunged a few times in a tumbler of water, makes it like a thin jelly, without taste or colour, which children afflicted with the summer complaint will drink freely: it is said to be the best remedy ever discovered.

MISCELLANY.

THE IOWA COPPER-MINES.

The Iowa copper mines are located about one mile from Mineral Point, and thirty-five miles from Galena—embracing four hundred acres of land; in which copper has been discovered at various points, in great abundance. It is found eighteen inches from the surface of the earth, and increases in value and quantity with the depth of the pits.

The great road and mail route from Galena and Green Bay, via. Fort Winnebago, passes through Mineral Point, and a rail-road has been projected, and an appropriation made for its survey from Milwaukie on Lake Michigan, to some point on the Mississippi near Galena, which passes through the mines. There is attached to the mineral tract, which is undulating prairie, nine hundred acres of woodland covered with a heavy growth of the best timber, for the business of smelting.

It is proposed to form a stock company, for the purchase of these mines. The real value of the mineral cannot be computed, but from the quality and quantity of the ore, which has been tested by science, it may be considered the most important mineral discovery in the United States. Copper ore found so high on the Mississippi river is a mattter of great consideration. A furnace is now in blast, and it only requires the erection of rolling-mills, for which every facility is afforded, to supply the Upper Mississippi and Missouri with this article, without the immense cost of transportation, on that extensive ascending navigation; and then there is a safe descending navigation, on the unobstructed bed of the Mississippi, for the surplus manufacture to New-Orleans, or to the outlet of that great national canal, a distance of two thousand miles.

It is a fact now generally known, that no land produces better wheat than that of the mineral region of Wisconsin; and as fine crops may be seen growing on the prairie lands, in fields surrounded by the miner's shafts, as will at any time be found in Pennsylvania, upon the best cultivated farms, tilled by the very best farmers in the world.

There is a body of land, extending from Green Bay to the Mississippi, embracing the country of Fox River, Winnebago Lake, and the Mineral district, which I believe to be unsurpassed in fertility and depth of soil. The Lakes and the Mississippi are now struggling for the mastery, and both points are filling up with an industrious and enterprising population so rapidly, that Wisconsin must enter the Union as a state, within two or three years. The material advantage of the lake country is its supply of lumber. The government, very properly, gave new settlers the privilege of procuring pine from saw mills, erected on lands occupied by the Indians, but which could not be purchased; and thus they erect comfortable buildings with ease and economy. But this favour has not been extended to the people of the Upper Mississippi, where pine is very scarce, except on lands yet occupied by the Indians, and the consequence is that the poor settler finds it very difficult to erect a comfortable dwelling, as pine boards sell at from forty to seventy dollars per thousand feet, and a sufficient supply can not be found. The demand for lumber is very great and daily increasing in consequence of the numerous towns springing up on the Mississippi and its tributaries, and the unebbing tide of emigration swelling upon the rich lands of the great valley.

HUNTING THE WILD BULL IN POLAND.

The Urus, a species of bison or wild bull, breeds in the forests of Poland, but the hunting of this animal has been long proscribed, even under pain of death. On the twelfth of October, 1836, the Governor General of the province, Prince Dolgurickow, gave a grand wild bull hunt in the ancient forest of Bialowicz. About two thousand hunters and trackers had driven into an angle in the heart of the forest, between two rivers, a troop of twenty of these animals, who were prevented from escaping by a circle of fires. The prince was stationed with his friends on a spacious stage, while the trackers roused the brakes.

Suddenly emerging from a dense part of the forest, within fifty yards of the stage, another troop of enormous urus, having at their head a male of immense size, and whose long beard floated in the wind, was perceived. The animals directed their course towards the spectators, but the leader was soon struck by a bullet from a gun fired by the Prince himself, and this succeeded by three other shots from Princes on the stage made the bull reel some two hundred paces, where he fell and was killed. The general shout by which this feat was accompanied proved that the greatest of the wanderers of the ancient forest of Bialowicz had then been prostrated.

These animals feed almost exclusively upon a wild herb called "tomka," for in the severe winters, when this fails them, they perish in great numbers. This is the reason why they are only to be met with in this forest, which, because of the abundance of the grass in question, is called "green" by the country people. As a memorial of this famous hunting match, every body present carried away a fist full of this grass, which has a strong smell, and something of an almond taste, particularly when dried. In cutting out the ure, the hunters remarked about the head a strong smell of musk, the brain being, it is known, the chief depository of that substance. The flesh may be eaten, though it has a wild flavour. The skin is very strong, but wants suppleness.

DIETETICK MAXIMS.

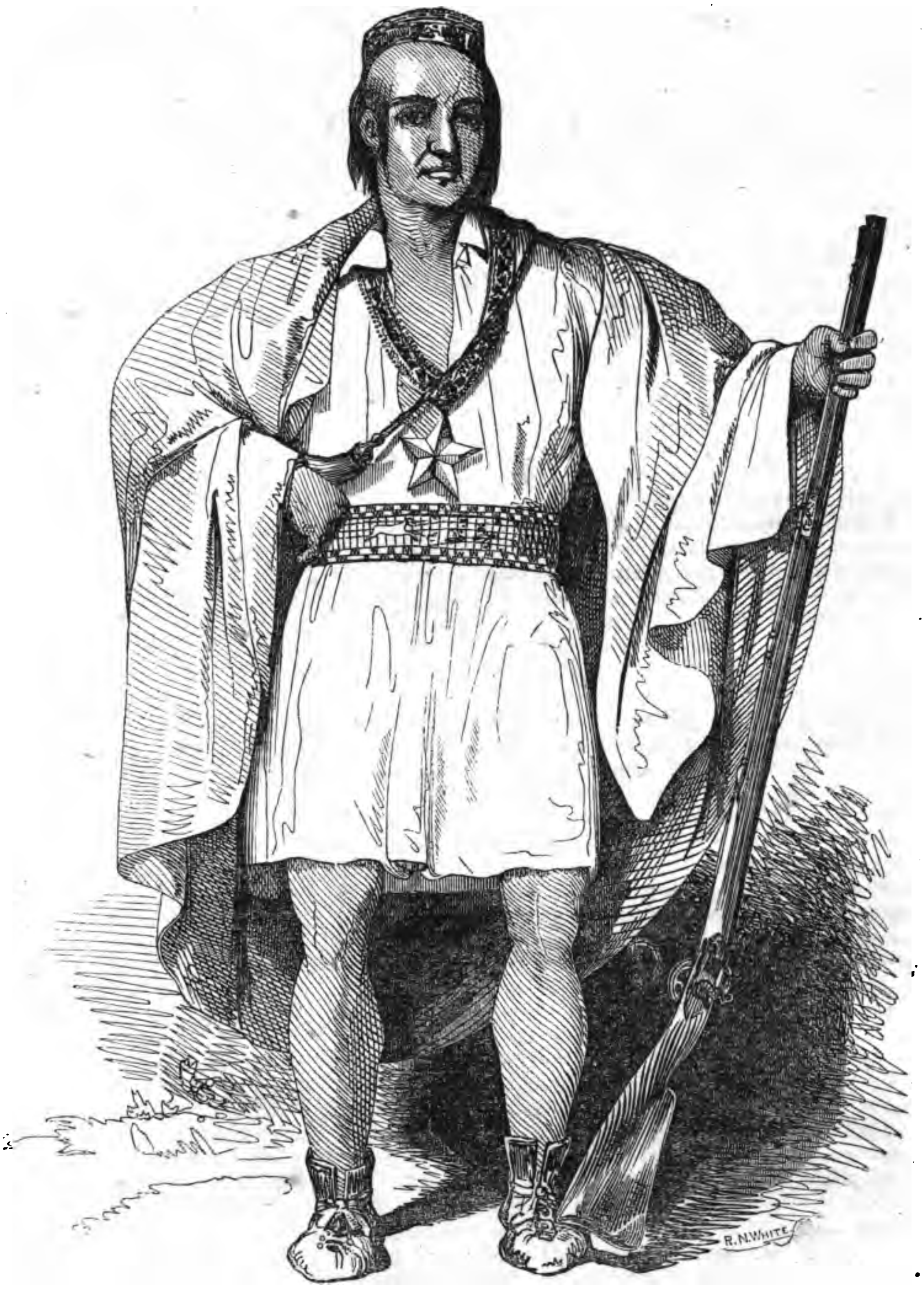
1. A healthy appetite is to be acquired by early rising—regular exercise in the open air—a cheerful mind, and abstinence from intoxicating liquors.

2. The food should be eaten slowly; so that it be well masticated and mixed with the saliva.

3. Animal food is sooner digested in the stomach than vegetable; but it is more stimulating or heating to the system. Flesh that has been long salted, dried hams, beef, &c., are less easily digested and less nutritive than fresh meat.

4. Farinaceous and vegetable food, generally, is slower of digestion than animal, but it is less heating. Many kinds of vegetable food are very nutritive.

5. Animal food should not be over-boiled; vegetables should be boiled till perfectly tender.



KING PHILIP—the last of the Wampanoags.

METACOMET, OF POKANOKET, CHIEF OF THE WAMPANOAGS—CALLED, KING PHILIP.

Philip, alias *Metacomet*, of Pokanoket, chief of the Wampanoags, was for many years the inveterate foe of the settlers in New England. Drake in his "Indian Biography" thus describes his final capture and death:—

"An army of fifteen hundred English, was raised by the three colonies, Massachusetts, Plimouth and Connecticut, for the purpose of breaking down the power of Philip among the Narragansets. They determined upon this course, as they had been assured that in the spring they would come with all their force upon them. It was not known that Philip was among them when this resolution was taken, and it was but a rumour that they had taken part with him. It was true, that they had promised to deliver up all the Wampanoags, who should flee to them, either alive or dead; but it is also true, that those who made this promise, had it not in their power; being persons, chiefly in subordinate circumstances, who had no right or authority to bind any but themselves. And, therefore, as doubtless was foreseen by many, none of Philip's people were delivered, although many were known to have been among them. Thus in few words have we exhibited the main grounds of the mighty expedition against the Narragansets in the winter of 1675.

Upon a small island, in an immense swamp, in South-Kingston, Rhode Island, Philip had fortified himself, in a manner superiour to what was common among his countrymen. Here he intended to pass the winter, with the chief of his friends. They had erected about five hundred wigwams of a superiour construction, in which was deposited a great store of provisions. Baskets and tubs of corn, were piled one upon another, about the inside of them, which rendered them bullet proof. It was supposed that about three thousand persons had here taken up their residence.

After nearly a month from their setting out, the English army arrived in the Narraganset country, and made their headquarters about eighteen miles from Philip's fort. They had been so long upon their march, that the Indians were long enough apprized of their approach, and had made the best arrangements in their power to withstand them. They had already suffered much from the severity of the season, being obliged to encamp in the open field, and without tents to cover them!

The nineteenth of December, 1675, is a memorable day in the annals of New England. Cold, in the extreme—the air filled with snow—the army were obliged, from the low state of their provisions, to march to attack Philip in his fort. And but for the treachery of one of his men, who, from his having an English name, is supposed to have lived among the English—and by hope of reward, betrayed his countrymen into their hands. His name was Peter, and it was by accident that himself, with thirty-five others, had just before fallen into the hands of the fortunate captain Mosely. No Englishman was acquainted with the situation of Philip's fort; and but for their pilot, Peter, there is very little probability that they could have effected anything against it. For it was one o'clock on that short day of the year, before they arrived within the vicinity of the swamp. There was but one point where it could be assailed with the least probability of success; and this was fortified by a kind of block-house, directly in front, and having flankers to cover a cross-fire. Besides high palisades, an immense hedge of fallen trees, of nearly a rod in thickness, surrounded it upon the outside, encompassing an area of about five acres. Between the fort and the main land, was a body of water, over which a great tree had been felled, on which all must pass and repass, to and from it. On coming to this place, the English soldiers, as many as could pass upon the tree, which would not admit two abreast, rushed forward, but were swept from it in a moment, by the fire of Philip's men. Still, the English soldiers, led by their captains, supplied the places of the slain. But again and again, were they swept from the fatal avenue. Six captains and a great many men had fallen, and a partial, but momentary recoil from the face of death took place: and but a handful had got within the fort. These were contending hand to hand with the Indians, and at fearful odds, when the cry of "they run! they run!" brought to their assistance a considerable body of their fellow-soldiers. They were now enabled to drive the Indians from their main breast-work, and their slaughter became immense. Flying from wigwam to wigwam—men, women, and children, indiscriminately, were hewn down and lay in heaps upon the ground. Being now masters of the fort, at the recommendation of Mr. Church, General Winslow was about to quarter the army in it for the present, which offered comfortable habitations to the sick and wounded, besides a plentiful supply of provisions. But one of the captains and a surgeon opposed the measure; probably from the apprehension that the woods were full Indians, who would continue their attacks upon them, and drive them out in their turn. There was doubtless, some reason for this, which was strengthened from the fact that many English were killed after they had possessed themselves of the fort, by those whom they had just dispossessed of it. Still, had Church's advice been followed, perhaps many of the lives of the wounded would have been saved; for he was seldom out in his judgement, as his long successes proved afterward. After fighting three hours, they were to march eighteen miles, before the wounded could be dressed, and in a most horrid and boisterous night. Eighty English were killed in the fight, and one hundred and fifty wounded; many of whom died afterward. The English left the ground in considerable haste, leaving eight of their dead in the fort. Philip, and such of his warriours as escaped unhurt, fled into a place of safety, until the enemy had retired; when they returned again to the fort. The English, no doubt, apprehended a pursuit, but Philip not knowing their distressed situation, and perhaps judging of their loss from the few dead which they left, made no attempt to harass them. Before the fight was over, many of the wigwams were set on fire. Into these, hundreds of innocent women and children had crowded, and perished in the general conflagration! and as a writer of that day expresses himself, "no man knoweth how many." The English learned afterward from some that fell into their hands, that in all about seven hundred perished.

Soon after this, Philip, with many of his followers, left that part of the country, and resided in different places upon Connecticut river. Some report that he took up his residence near Albany, and that he solicited the Mohawks to aid him against the English, but without success. The various attacks and encounters he had with the English, from February to August, 1676, are so minutely recorded, and in so many works, that we will not enlarge upon them in this place.

When success no longer attended him, in the western parts of Massachusetts, those of his allies whom he had seduced into the war, upbraided, and accused him of bringing all their misfortunes upon them; that they had no cause of war against the the English, and had not engaged in it but for his solicitations; and many of the tribes scattered themselves in different directions. With all that would follow him, as a last retreat, Philip returned to Pokanoket.

On the eleventh of July, he attempted to surprise Taunton, but was repulsed. His camp was now at Matapoiset; and the English came upon him under Captain Church, who captured many of his people, but he escaped over Taunton river, as he had done a year before, but in the opposite direction, and secreted himself once more upon Pocasset. He used many stratagems to cut off Captain Church, and seems to have watched and followed him from place to place, until the end of this month; but continually loosing one company after another. Some scouts ascertained that he, with many of his men, were at a place upon Taunton river, and from appearances were about to repass it. His camp was now at this place, and the chief of his warriours with him. Some soldiers from Bridgewater fell upon them here, July thirty-first, killed ten warriours; but Philip having disguised himself, escaped. His uncle, Akkompoin, was among the slain, and his own sister taken prisoner.

The next day, August first, the intrepid Church came upon his headquarters, killed and took about one hundred and thirty of his people, and himself very narrowly escaping. Such was his precipitation that he left all his wampum behind, and his wife and son fell into the hands of Church. Some of Philip's Indians, who now served under Church, said to him, "You have now made Philip ready to die; for you have made him as poor and miserable as he used to make the English. You have now killed or taken all his relations—that they believed he would soon have his head, and that this bout had almost broken his heart."

Philip having now but few followers left, was driven from place to place, and lastly to his ancient seat, near Pokanoket. The English for a long time had endeavoured to kill him, but could not find him off his guard; for he was always the first who was apprized of their approach. Having put to death one of his men for advising him to make peace with them, his brother deserted him, and gave Captain Church an account of his situation, and offered to lead him to the place. Early on Saturday morning, August, twelfth, Church came to the swamp where Philip was encamped. And before he was discovered, had placed a guard about it, so as to encompass it, except a small place. He then ordered Captain Golding to rush into the swamp, and fall upon Philip in his camp; which he immediately did—but was discovered as he approached, and as usual, Philip was the first to fly. Having but just awaked from sleep, had on but a part of his clothes, he fled with all his might. Coming directly upon an Englishman and an Indian, who composed a part of the ambush at the edge of the swamp, the Englishman's gun missed fire, but Alderman, the Indian, whose gun was loaded with two balls, "sent one through his heart, and another not above two inches from it. He fell upon his face in the mud and water, with his gun under him."

Cure for intemperance and smoking.—Indian cunning.—A friend of ours, who has had extensive dealings with the Indians of Mississippi, relates the following characteristick anecdote, which he says is undoubtedly the truth. A chief, by the name of Glover, in a gush of passion, happened to slay another Indian. The invariable penalty for killing among these primitive beings is death; and that punishment is, by their custom, to be inflicted by the nearest friends of the deceased. These had met together with the prisoner in their charge to execute the last sentence on poor Glover. He asked one favour of them, before he died, and, as generous enemies, he hoped they would grant it, as it was the last he would ever ask of them; it was, that he might be permitted to take one more glass of liquor and smoke one more pipe of tobacco. So small a request was readily granted; they promised to postpone the execution until he drank and smoked again. Having got them sufficiently committed to this proposition, he gave them to understand that he never intended to do either. Such is the sacredness of an Indian promise, that this subterfuge has thus far saved Glover's life, and this occurrence took place ten years ago.

THE DEAD MARINER.

BY GEORGE D. PRENTICE, ESQ.

SLEEP on—sleep on—above thy corpse
  The winds their sabbath keep—
The wave is round thee—and thy breast
  Heaves with the heaving deep.
O'er thee, mild eve her beauty flings,
And there the white gull lifts her wings;
And the blue halcyon loves to lave
Her plumage in the holy wave.

Sleep on—no willow o'er thee bends
  With melancholy air,
No violet springs, nor dewy rose
  Its soul of love lays bare;
But there the sea-flower bright and young
Is sweetly o'er thy slumbers flung;
And, like a weeping mourner fair;
The pale flag hangs its tresses there.

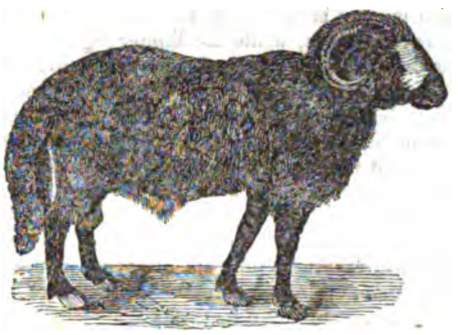
Sleep on—sleep on—the glittering depths
  Of ocean's coral waves
Are thy bright urn—thy requiem,
  The musick of its waves;—
The purple gems for ever burn,
In fadeless beauty round thy urn;
And, pure and deep as infant love,
The blue sea rolls its waves above.

Sleep on—sleep on—the fearful wrath
  Of mingling cloud and deep,
May leave its wild and stormy track
  Above thy place of sleep.
But when the wave has sunk to rest,
As now 't will murmur o'er thy breast;
And the bright victim, of the sea
Perchance will make their home with thee.

Sleep on—thy corpse is far away,
  But love bewails thee yet—
For thee the heart-rung sigh is breathed,
  And lovely eyes are wet:—
And she, thy young and beauteous bride,
Her thoughts are hovering by thy side;
As oft she turns to view with tears
The Eden of departed years.

NATURAL HISTORY.

THE SHEEP.

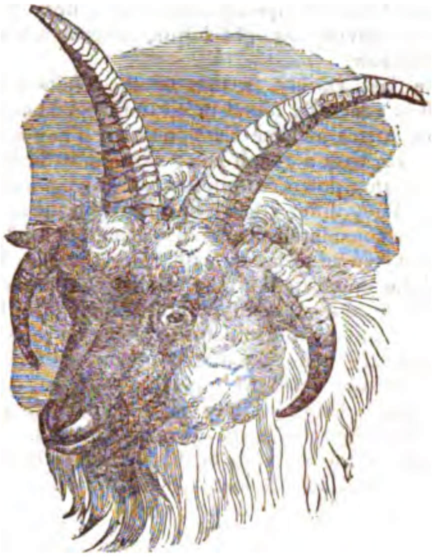


[Syrian Sheep.]

The above engraving represents the broad-tailed sheep, so common in Tartary, Arabia, Persia, Barbary, Syria, and Egypt. "This sheep is only remarkable for its large and heavy tail, which is often found to weigh from twenty to thirty pounds. It sometimes grows a foot broad, and is obliged to be supported by a small kind of board, that goes upon wheels. This tail is not covered underneath with wool, like the upper part, but is bare; and the natives, who consider it as a very great delicacy, are very careful in attending and preserving it from injury. Mr. Buffon, supposes that the fat which falls into the caul in our sheep, goes in these to furnish the tail; and that the rest of the body is from thence deprived of fat in proportion. With regard to their fleeces, in the temperate climates, they are, as in our own breed, soft and woolly; but in the warmer latitudes, they are hairy; yet in both they preserve the enormous size of their tails.

Sheep, like other ruminant animals, want the upper fore-teeth; but have eight in the lower jaw: two of these drop, and are replaced at two years old; four of them are replaced at three years old; and all at four. The new teeth are easily known from the rest, by their freshness and whiteness. There are some breeds, however, that never change their teeth at all; these the shepherds call the *leather-mouthed cattle;* and, as their teeth are thus long wearing, they are generally supposed to grow old a year or two before the rest. The sheep brings forth one or two at a time, and sometimes three or four. The first lamb of an ewe is generally pot-bellied, short, and thick, and of less value than those of a second or third production; the third being supposed the best of all. They bear their young five months; and, by being housed, they bring forth at any time of the year.

But this animal, in its domestick state, is too well known to require a detail of its peculiar habits, or of the arts which have been used to improve the breed. Indeed, in the eye of an observer of nature, every art which tends to render the creature more helpless and useless to itself, may be considered rather as an injury than an improvement; and if we are to look for this animal in its noblest state, we must seek for it in the African desert, or the extensive plains of Siberia. Among the degenerate descendants of the wild sheep, there have been so many changes wrought, as entirely to disguise the kind, and often to mislead the observer. The variety is so great, that scarcely any two countries have their sheep of the same kind; but there is found a manifest difference in all, either in the size, the covering, the shape, or the horns. The sheep without horns are counted the best sort, because a great part of the animal's nourishment is supposed to go up into the horns.



[Four-Horned Ram.]

The woolly sheep, as it is seen among us, is found only in Europe, and some of the temperate provinces of Asia. When transported into warmer countries, it loses its wool, and assumes a covering fitted to the climate, becoming hairy and rough; it there also loses its fertility, and its flesh no longer has the same flavour. In the same manner, in the very cold countries, it seems equally helpless and a stranger; it still requires the unceasing attention of mankind for its preservation; and although it is found to subsist, as well in Greenland as in Guinea, yet it seems a natural inhabitant of neither.

Of the domestick kinds to be found in the different parts of the world, besides our own, which is common in Europe, another variety is to be seen in Iceland, Muscovy, and the coldest climates of the north. This, which may be called the Iceland sheep, resembles our breed in the form of the body and the tail; but differs in a very extraordinary manner in the number of the horns; being generally found to have four, and sometimes even eight, growing from different parts of the forehead. These are large and formidable; and the animal seems thus fitted by nature for a state of war: however, it is of the nature of the rest of its kind, being mild, gentle, and timid. Its wool is very different also from that of the common sheep, being long, smooth, and hairy. Its colour is of a dark brown; and under its outward coat of hair it has an internal covering, that rather resembles fur than wool, being fine, short, and soft.

The third observable variety is that of the sheep called *strepsicheros*. This animal is a native of the islands of the Archipelago, and only differs from our sheep in having straight horns, surrounded with a spiral furrow.

The last variety is that of the Guinea sheep, which is generally found in all the tropical climates, both of Africa and the East Indies. They are of a large size, with a rough hairy skin, short horns, and ears hanging down, with a kind of dewlap under the chin. They differ greatly in form from the rest, and might be considered as animals of another kind, were they not known to breed with other sheep. These, of all the domestick kinds, seem to approach the nearest to the state of nature. They are larger, stronger, and swifter, than the common race; and, consequently, better fitted for a precarious forest life. However, they seem to rely, like the rest, on man for support; being entirely of a domestick nature, and subsisting only in the warmer climates.

Such are the varieties of this animal, which have been reduced into a state of domestick servitude. These are all capable of producing among each other; all the peculiarities of their form have been made by climate and human cultivation; and none of them seem sufficiently independent to live in a state of savage nature. They are, therefore, to be considered as a degenerate race, formed by the hand of man, and propagated merely for his benefit. At the same time, while man thus cultivates the domestick kinds, he drives away and destroys the savage race, which are less beneficial, and more headstrong. These, therefore, are to be found in but a very small number, in the most uncultivated countries, where they have been able to subsist by their native swiftness and strength. It is in the more uncultivated parts of Greece, Sardinia, Corsica, and particularly in the deserts of Tartary, that the moufflon is to be found, that bears all the marks of being the primitive race; and that has been actually known to breed with the domestick animal.

The moufflon, or musmon, though covered with hair, bears a stronger similitude to the ram, than to any other animal: like the ram, it has the eyes placed near the horns: and its ears are shorter than those of the goat; it also resembles the ram in its horns, and in all the particular contours of its form. The horns also are alike; they are of a yellow colour; they have three sides, as in the ram, and bend backward in the same manner behind the ears; the muzzle, and the inside of the ears, are of a whitish colour, tinctured with yellow; the other parts of the face are of a brownish gray. The general colour of the hair over the body is of a brown, approaching to that of the red deer. The inside of the thighs and the belly are of a white, tinctured with yellow. The form, upon the whole, seems more made for agility and strength than that of the common sheep; and the moufflon is actually found to live in a savage state, and maintain itself, either by force or swiftness, against all the animals that live by rapine. Such is its extreme speed, that many have been inclined rather to rank it among the deer kind, than the sheep. But in this they are deceived, as the musmon has a mark that entirely distinguishes it from that species, being known never to shed its horns. In some these are seen to grow to a surprising size; many of them measuring, in their convolutions, above two ells long. They are of a yellow colour, as was said, but the older the animal grows, the darker the horns become: with these they often maintain very furious battles between each other; and sometimes they are found broken off in such a manner, that the small animals of the forest creep into the cavity for shelter. When the musmon is seen standing on the plain, his forelegs are always straight, while his hinder legs seem bent under him; but in cases of more active necessity, this seeming deformity is removed, and he moves with great swiftness and agility. The female very much resembles the male of this species, but that she is less, and her horns also are never seen to grow to that prodigious size they are of in the wild ram. Such is the sheep in its savage state; a bold, noble, and even beautiful animal: but it is not the most beautiful creatures that are always found most useful to man. Human industry has therefore destroyed its grace, to improve its utility."

THE COMMON, OR WILD PIGEON, OR DOVE.

The genus *Columba* includes, what are commonly called the dove and the pigeon, with all their varieties; and they intermix and amalgamate without any apparent reluctance. They are easily domesticated, and are far less mischievous or troublesome than other tamed birds. When ill treated, however, they quit their old abodes, and seek the haunts of the distant forest. The wild pigeon is found both in the western and eastern continent, and their peculiar habits are generally well known. Both the domestick and the wild are proverbially faithful in their connubial attachment and condition. They procreate almost every month in the year, and their increase therefore is remarkably rapid. As to the form of the dove or pigeon, it is beautiful as any bird known, and its colours are attractive though not so gaudy as some others. They are very rapid on

[The Wild Pigeon, or Dove.]

the wing, and are known to pass over a great distance of country in a short time. From very remote ages, they have been employed to convey intelligence on particular occasions. They are so used, even now, in some parts of Europe. Very recently, some were thus employed as "swift messengers," from Paris to Antwerp. The pigeons to be used for such a purpose, are taken from the place, to which the intelligence is intended to be sent, and the letter, of as little weight as possible, is fastened to the wings in such a way as not to impede their use; and then they are let loose, when they return directly and quickly to their home, by an unaccountable instinct.

The wild pigeon is a migratory bird, and yet they are not so regular nor do they wander so far, as some others, which go from the extreme north to the far south. They visit different parts of the United States, however, at different seasons. They are not often found in the New England states, except in summer, or the latter part of spring. They abound in the month of May and again in August, when they are still more abundant. In some parts of New York, Ohio, &c., they are very numerous; and a century ago, were in far greater numbers in Massachusetts now then they are. As food, they are much sought and valued.

Above all other birds, the dove is most intimately and familiarly associated in our minds with ideas of the quiet seclusion of rural life, and the enjoyment of peace and love. This simple bird, by no means remarkable for its sagacity, so soft in its colouring and graceful in its form, that we cannot behold it without being conscious of its perfect loveliness, is in some instances endowed with an extraordinary instinct, which adds greatly to its poetical interest.

That species called the carrier pigeon has often been celebrated for the faithfulness with which it pursues its mysterious way, but never more beautifully than in the following lines by Moore:—

"The bird let loose in eastern skies,
  When hast'ning fondly home,
Ne'er stoops to earth her wing, or flies
  Where idle wanderers roam.

But high she shoots through air and light,
  Above all low delay,
Where nothing earthly, bounds her flight,
  Or shadow dims her way.

So grant me, God, from every stain
  Of sinful passion free,
Aloft through virtue's purer air,
  To steer my flight to thee.

No sin to cloud, no lure to stay
  My soul, as home she springs,
Thy sunshine on her joyful way,
  Thy freedom on her wings."

LENTILS.

"The lentil (or *Lens esculenta* of some writers, and the *Ervum lens* of Linnæus) belongs to the leguminous or podded family. The stem is branched, and the leaves consist of about eight pairs of smaller leaflets. The flowers are small, and with the upper division of the flower prettily veined. The pods contain about two seeds, which vary from a tawny red to a black. It delights in a dry, warm, sandy soil. Three varieties are cultivated in France—

[Lentils.]

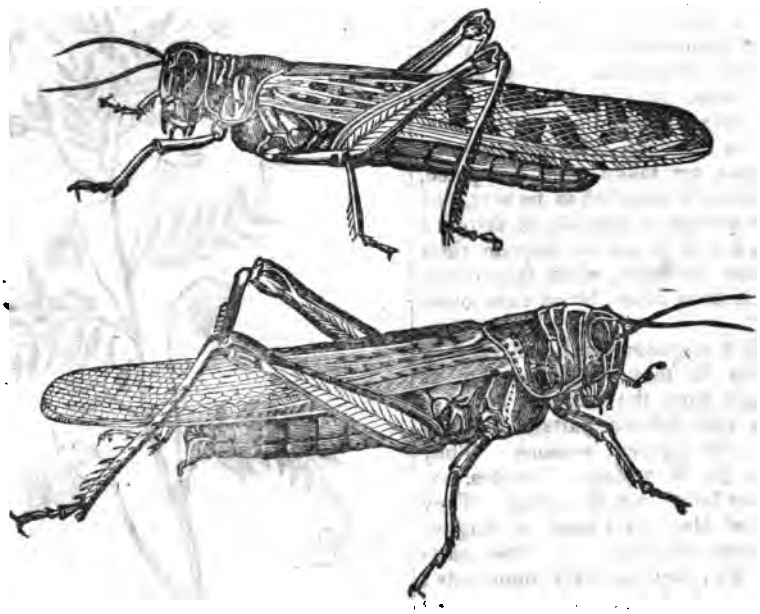
"small brown," "yellowish," and the "l
ence." In the former country they are
eaten during Lent as a haricot; in Sy
used as food after they have undergone
process of being parched in a pan over t

The *edom* or red pottage, was preparec
ing lentils (*adashim*) in water; and subse
we may guess from a practice which
many countries, adding a little *manteca*,
give them a flavour. The writer of thes
tions has often partaken of this self-same
tage," served up in the manner just desc
found it better food than a stranger would
imagine. The mess had the redness whic
for it the name *edom;* and which, through
gular circumstance of a son selling his birt
satisfy the cravings of a pressing appetite, i
ed to the posterity of Esau in the people of

ON BEETLES AND LOCUSTS.

"The return of a great abundance of bee
been long observed to be in the same place
every third year; and this is in a contradicto
ner to the abundance of the locusts, which

[The Beetle]



[The Locust.]

ways found to be most scarce in that year. The beetle lays its eggs in the beginning of winter, and these in the succeeding spring produce a sort of grubs, which live under the surface of the earth, and in this state they continue till the third year, when they change into beetles in July, and die, after laying their eggs, in October. The eggs of the locust are the destined food for these animals, and as provident Nature has always allowed a sufficient quantity for their supply, if at any time there be not sufficient grubs to eat them, the country is consequently overrun by the locusts; and this, which is looked upon as a miracle, or preternatural visitation, is found, when strictly inquired into, to be only the natural course of those laws by which the whole chain of beings was at first regulated. The periodical years of abundance or scarcity of locusts may be thus accounted for: when the beetles lay their eggs, the next year only hatches them into grubs, which are small, and unable to eat any of the locust eggs; consequently, the year after, great quantities of these devourers are produced. In the second year the grubs increase in strength, and are able to eat their destined food; from which operation the succeeding year affords only what may be called a moderate number of locusts, neither remarkably fine nor in great abundance. In the third year, the grubs being at their full growth and strength, they then devour a prodigious number of eggs, after which they pass through the chrysalis state, and become beetles; the consequence of which is, that in the third year there is a vast number of beetles and a smaller number of locusts; after this, the latter gradually increase in number, until they are devoured again. Thus, in the general scale of beings, no one is created for itself alone; but there is a dependance in every link of the great universal chain, and every being it consists of, up to man, at least, is of service to some other! In order to this, it is necessary that the species be not wholly destroyed; but that many more young ones should be produced than ever come to maturity, as in the eggs of the butterfly for birds and other creatures, and the immense number of fry produced from the roes of female fish, as food for other fishes. In tracing the wonders of Nature in this manner to their source, who can avoid seeing the goodness of God, who has allotted the reciprocal increase of the beetles and the locusts in such a manner, that there shall always be but a very few of the latter to lay their eggs in that year when they will almost all attain maturity; but even here second causes again interfere, and a dry autumn and a wet spring prove great impediments to the increase of locusts in those years when the little grubs of the beetles are able to do them but little injury.

Tradition relates, as well as history, that the locust has been a plague to the meridional provinces of Spain, from time immemorial. In an old Spanish document is the following question: "Which is the animal that resembles most all other animals?" The answer is: "The locust; because he has the horns of a stag; the eyes of a cow; the forehead of a horse; the leg of a crane; the neck of a snake; and the wings of a dove."

The locust, *Gryllus migratorius*, belongs to the same family as the cricket and grasshopper. It is about two inches and a half in length, and is for the most part green with dark spots. The mandibles or jaws are black, and the wing coverts are of a bright brown spotted with black. It has an elevated ridge or crest upon the thorax, or that portion of the body to which the legs and wings are attached. The locusts seen in the engraving, are said to be unlike any that were seen before or after, in size and numbers. There is another species found in Egypt, Barbary, and the south of Europe, the *Gryllus Aegyptius*, which is somewhat larger than the migratorius. The voracity with which the *Gryllus migratorius* eats up every thing that is green and tender has rendered a visit from a swarm of these creatures one of the most terrible judgements that can overtake an eastern nation."

PLANE-TREE.

There seems to be no doubt that the plane-tree is the *Armon* of Scripture, since the Arabic, Greek, Syrian, and Vulgate versions all agree in so considering it. The *Platanus orientalis* was a very favourite tree among the ancients, as the classical reader well knows. The term Platanus, is from a Greek word signifying "broad," and applies to the diffusive shade of this delightful tree, which was in fact the quality that recommended it to the attachment of Eastern nations. The Hebrew appellation *Armon* comes from a root which signifies *to be stripped*, and agrees very well with the plane, when the bark spontaneously peels off, and leaves the trunk apparently bare. The chestnut has a wide spreading top, but its bark, though curiously cleft into oblong cells, does not peel off, as in the plane and birch.

WOOD ENGRAVING.

[Dunlap's Arts of Design.]

As engraving and printing unquestionably had their origin in China, it will be proper to give a sketch of the peculiar modes practised in that empire. The design is made on a thin, transparent paper, and pasted with the face downward on the block; it is then engraved by cutting through the paper into the wood, leaving standing only those portions of the surface which appear black in the drawing. Their tools are similar in many respects to those of other block-cutters, ancient and modern, consisting of a knife for outlining, with gouges, chisels, &c. of various shapes, for clearing away the wood. They use them with much celerity, especially the knife, which they guide with both hands; this facility enables them to furnish their blocks with great rapidity, and at an astonishingly cheap rate. The Chinese have never attempted the use of moveable types; all their books, illustrative or descriptive, being printed from wooden blocks, cut in the manner described; and this mode is to them far more economical, owing to the low price of workmanship of every kind.

Their method of printing is simple, and peculiar to themselves. The block must be in a firm and level position, being first tightly fixed in a larger piece of wood to give it stability; in front of this the paper is placed, cut to the proper size. The ink (which is merely a reduction without oil of that known as Indian ink) being distributed on a smooth piece of board, the workman takes a moderately stiff brush, which he dips into it, and rubs the block carefully therewith. The paper is next laid over, and rubbed with a second brush, which is soft, and shaped like an oblong cushion; the paper not being sized, a gentle pressure is sufficient, which may be repeated or regulated, as occasion may offer. A third brush very stiff, is used for cleaning the blocks. These brushes are curiously made of the fine fibres of the palm or cocoanut-trees. A set of these printing materials, supposed to be the only specimens in Europe, may be seen in the museum of the English East India Company. In the manner described, without the aid of any press, have all impressions been taken in China, from the earliest periods to the present day. Their paper being so very thin, is printed on one side only, and each leaf in their books is folded in binding, and the edges turned inward, and stitched with silk. There is much neat and curious execution about some of their cuts, but they seldom go beyond outlines, and are altogether deficient in the true principles of drawing.

Much disputation has arisen as to the period when engraving was first practised in Europe. The earliest specimen of which there is any record is said to have been executed, on wood, at Ravenna, in 1285. In the next, or fourteenth century, the productions of the art were chiefly playing-cards and figures of saints. It was practised, first in the Venetian States, and afterward in Germany and the Low Countries, to a great extent. The impressions appear to have been taken by a hand-roller, the press not being known until the following century, in the early part of which larger subjects, of a devotional kind, with inscriptions, were engraved. Several of these curious prints are still extant; amongst them, in the possession of Earl Spencer, is the celebrated one of St. Christopher bearing the infant Jesus, remarkable as being the earliest print to which is assigned a certain date, viz. 1423. The success of these gave rise to a more extensive application of the art. Scriptural designs of many figures were cut with descriptive texts on each block; they were printed on one side only of the paper, and two of the prints were frequently pasted together to form one leaf, with a picture on each side: entire sets were subsequently bound up, and thus were formed the block books so well known to antiquaries. The Apocalypse of St. John, probably the first of these works, was published about the year 1420; one of the identical blocks cut for it still exists in the library of Earl Spencer. The latest and most noted of them, the "Speculum Humanæ Salvationis," appeared in 1440, and being partly printed from moveable wooden types, became the connecting medium that gradually introduced the invaluable art of typography, which, facilitating the production of books, was the means of greatly increasing the demand for wood-cuts, for primers, prayer-books, &c. In 1457, Faust produced his Psalter, printed with metal types, and initials in colours from blocks. Typography was introduced into England in 1474, but was executed in a ruder manner than on the continent; and till 1493, wood-cuts every where consisted of little more than outline. In that year, a great improvement was perceptible, and attempts were made at cross-hatching. This was carried to a much higher perfection by Albert Durer, an eminent painter, who published several large works of high talent, and who engraved on copper as well as wood. The sixteenth century produced Holbein, and many other able wood-engravers, in several parts of continental Europe. In the seventeenth century the art visibly declined, owing to the superiour cultivation of copper-engraving, and by the year 1700, it had sunk to a very depressed state. With the exception of the French family of Papillon, its annals afford no name of distinction, till 1768, when Bewick, who had the genius of a painter, appeared. His works are well known, and effected, by their excellence, the restoration of an almost lost art. Other artists have since introduced a richer and more varied style of workmanship, which has led to the adoption of the art to so wide an extent as must ever prevent its again sinking into neglect.

The theory and practice of this art are in principle the reverse of engraving on copper; in the latter the lines to be printed are sunk or cut in the plate; these being filled with ink, are by means of a rolling-press transferred in effect to the paper. In wood-engraving, on the contrary, the parts that are to appear must be raised, or rather left untouched, and hence it is frequently termed relief-engraving. In printing, the surface is only charged with ink, and the impression is taken as from types. The copper-engraver rarely uses more than three tools of the kind called burins, or gravers. The artist on wood requires according to circumstances, from ten to fifteen or eighteen, called gravers, tools for tinting and sculptures, the latter are used for cutting out the broader parts which are to be left white. The earlier artists cut on various kinds of wood, such as the apple, pear, &c.: these being termed soft woods, are now only in request for calico-printing, and other manufacturing purposes; for as the style of work improved, they were abandoned, and box was tried on account of its superiour texture and compactness, which have caused it to be the only kind used for every subject that can be properly termed a work of art. The surface of the wood to be engraved is carefully planed, scraped, &c. so as to render it as smooth as possible, in order to receive the drawing which must be put on the block itself, previously to commencing the engraving. The artist in its execution, has to arrange the strength and direction of the lines required for the various parts and distances, so that the printed impression, though composed of different series of interlineations, may present the same character in effect as the original drawing.

Much care is requisite, on the part of the engraver, to prevent a delicate design from being rubbed during the process of cutting; and it is usually covered with paper, which is removed by degrees as required. It will be apparent also, how much depends upon the skill of the engraver, when it is considered, that with every line cut by the tool, a portion of the effect of his original is removed, and his recollective powers and taste must be in constant exercise, to preserve the points of the design; and the block must be wholly engraved before any impression can be taken. The copper-engraver, on the contrary, is enabled to take progressive proofs of his work, and has his original drawing unimpaired, constantly before him. The latter has also another important advantage, in what is termed tinting; inasmuch as all his skies and flat back-grounds can be cut on the plate itself by mechanical means; and his various tints are thereby produced with every required delicacy. The wood-engraver can have no such facility; all depends upon the steadiness of the eye and hand, properly to effect the object, by cutting line after line individually, without any auxiliary assistance whatever.

These brief explanations may show the principles on which all wood-engravings are effected. Thus, whether the design relate to landscape, the human figure, or any other subject, it must be composed of an infinite number and variety of projecting portions of wood, produced by those delineations which, in the judgement of the engraver, are best calculated to convey, when printed, the desired effect.

The ancient mode of working was on the side of the grain, the wood being cut the longitudinal way of the tree; this method continued, for all wood-cuts, till about the year 1725, when the present method was commenced in England, of cutting the tree transversely, or across. This plan, presenting the end of the grain, admits, from its greater tenacity, of a finer kind of workmanship, and the application of the description of tools before named. The block-cutters for paper-hangings, &c. have their wood prepared in the same way as the old masters, and of course use similar tools; the chief of which is a knife, shaped somewhat like a lancet, with which the line must be cut on both sides, and the superfluous wood must be removed by gouges, chisels, &c. of various shapes, as derived originally from the Chinese. When we consider that in this way all the finished works of the ancients were produced, it attaches a very great degree of merit to them; it being evidently a more tedious process than the modern; since, if a line be cut with a knife, it must be met by another line, before any wood can be taken out; whereas, in the present mode, the graver, as it cuts the incision, removes the wood at the instant of operation.

The value of wood-engraving is becoming daily more and more apparent in both hemispheres, by the demands on the talents of those who practise it. Its prominent points and beauties will hereby, by degrees, become more universally understood; but for this a thorough reformation in printing is necessary. Considering the innumerable works continually issued, illustrated with wood-cuts, the publick have, with very few exceptions, but little chance of duly estimating its merits; since, in the greater number of these books, the engravings are printed in so heedless a manner, as scarcely to deserve, by their appearance, the name of embellishments.

FARMERS' DEPARTMENT.

THE GREATEST FARM IN ENGLAND.

The correspondent of the Boston Transcript, furnishes the following interesting account of the Manor of Mr. Coke, in Norfolk—recently elevated to the Peerage by Queen Victoria.

HOLKAM HALL, Norfolk, June, 1837. This place is renowned throughout England at least, as the seat, and especially as the farm, of old Mr. Coke, the father of the farmers of Norfolk; and I am happy, therefore, to have enjoyed an excellent opportunity of seeing the estate. I shall not probably find in Great Britain a better specimen either of the style of life or of a "good old country gentleman" of this realm, and of the ancient school, or of the management of a first rate practical proprietor's estate. Let me begin by giving you some idea of the latter; premising that this is the same Mr. Coke' who moved, in the House of Commons, the discontinuance of the American war of '75, and who, having carried it in that great and excited body by a majority of one, was himself, at the suggestion of his friend Mr. Fox, appointed at the head of a committee to take up an address to His Majesty George III, in pursuance of the vote. This he did in his farmer's dress, with his white topp'd boots and frock on, for that was the costume. Every American must respect the old man for this achievement, and they will not like him less to know that every day at his table, during that barbarous war, he was accustomed, as he often declares now, to drink the health of Gen. Washington, as the greatest man in existence. This liberal spirit has always distinguished Mr. Coke, and he began his career in Parliament with the war itself, and remained in it near sixty years. Were he still a member, which his age eighty-two now prevents, he would by many years be the "Father of the House."

Well! Now for the estate; and first, merely as a farmer's. The land here is about three thousand five hundred acres; nearly the whole of it is enclosed by a neat, high, brick wall extending about a circuit of ten miles. This comprises the plantations of wood, and a beautiful "lake," as they call it, both of which are wholly artificial. The latter is the finest artificial water that I ever saw, and quite deceived me. Nothing could appear more originally rural than its borders which are completely overshadowed with forests, and as wild altogether as if I had discovered them and the lake itself in the depth of some solitude of Michigan. All these woods have been planted. The estate is plentifully sprinkled over with various species of trees, in copses, in acres of forest, and in avenues; and all is artificial work, and yet that art so perfect that the warmest lover of nature cannot desire more. Instead of a mere park, in one body, it is as one wants it—every where an ornament and a shelter—over hill and dale—but nowhere in excess, or yet in the way of the farmer. Immediately around the mansion, (of which hereafter,) indeed, are only gardens, walks, and a wide extent of velvet lawns on every side; but even these latter are marked with their owner's scheme of the practical. It is not only the pheasant I see shuffling about here in these cool shades. It is not alone the graceful deer that browze and bound along these soft lawns. These are a charm to the eye, and I like the taste which allows them this sweet free range, and which saves the poor beautiful creatures from all harm. Here are the woods too. As I rode through their long winding lanes to-day on horseback, the air was filled with the perfume of forest flowers, and with the chirping and fluttering of birds. The yellow-hammer whirred away on his gay speckled wings, as we trotted up to him; the shining blue-jay glanced "like a javelin by;" and "the wood-pecker tapped at the hollow beech-tree."

The remoter lawns are spotted with little flocks of sheep, of which over three thousand are kept on the place, of the famous South Devon breed. One meets also in the pastures these fine sleek, bright looking, Devon cattle, browzing in herds. There are more than three hundred of them including an immense dairy, besides Scotch cattle. Beyond the lawns, one gets at once into the cultivation, and a ring of this, skirted and sheltered here and there with avenues and copses of trees, encircles the whole estate. I rode along the edge of a field of one hundred and thirty acres of barley in one place. In another were sixty acres of wheat; and there were two fields of peas, of twenty-five and twenty-seven acres. The arable land is divided about equally between these grains, turnips, and grass, which four crops, sometimes having grass for two seasons, constitutes the routine of the succession of tillage on the same ground. There are in cultivation at present about four hundred and thirty acres of wheat and barley each, and in fine condition. The head farmer told me that thirty bushels an acre is rather an indifferent crop, and that forty and fifty are more "the right thing." It must be borne in mind, when I say this, that Holkam has been completely *made over* by Mr. Coke. When he succeeded to the estate, it was but a mere desert. There were no trees here even, and it was hardly believed the land would let them grow. Mr. Coke says the rabbits were the only creatures who *could* live on it, and they were starving! Now what a triumph is this! Go with me to-day into this village of Holkam, which all belongs virtually to the estate, and lives by it in one way or another. Here are five hundred persons, probably, besides those sent off, well provided for elsewhere. Their cottages are a curiosity of rural neatness and comfort. Little gardens surround them, and flowers hang out of the windows and climb over the doorways. Some one hundred and fifty persons are employed on the *farm* alone. Then in the gardens, the light acres of which are surrounded with a wall fourteen hundred yards long and fourteen feet high, are perhaps forty more; in the brickyard twenty; in the blacksmith's shop ten; and some wheel-wrights; and game-keepers, I dare say; and a little army of servants, of course, for in the mansion, when the family are here, twenty females alone are employed. The women do some work also on the farm; such as weeding the grain, which, as well as the peas, and in fact all the crops, is *drilled*. I saw twenty women in one field, weeding. Beyond that, and outside of the walls of the regular estate, we came to a "*little bit*" of a plantation, of only six hundred more. Here they were hard at work. In one field, where turnips were sowing, all the processes went on at once. There were twenty men and boys spreading manure, out of five or six carts, drawn by three horses each; (of which there are a hundred on the place,) five or six ploughs, drawn by two, who ploughed without a driver; then two cast iron round rolls, by two; three or four harrows, by one; two drill machines, self sowing, by two; and then the harrow again brought up the rear. I ought to speak of the almshouse for the old, and the schools for the young, and of the farming system more in detail, but there is no room. I will only add that young farmers come here from all quarters to learn the science. I saw four of them riding over the grounds this morning, who are under the care of the manager. The whole place is considered a model of both the science and the art of farming.

SUGAR BEET.

A correspondent of the Cincinnati Gazette furnishes the following interesting facts, collected by observation in relation to the cultivation of Beet.

"When on a visit to the farm of our enterprising citizen, Lot Pugh, thirty-two miles north of our city, I saw white Sugar Beets, raised from seed imported from France, which measured *thirty inches* in circumference, and weighed, after being removed from the ground and divested of foreign substances, twenty-two pounds. Although the specimen which was measured and weighed, was taken from a field of several acres, still it probably was not the largest for the greater part of the crop appeared to be of equal magnitude. A Mangel Wurtzel from the same grounds and raised from imported seed also, measured twenty-five inches in circumference, and weighed sixteen pounds and a half. It must be observed that as these beets were removed from the earth on the twenty-third of August, they had not attained their full growth. Indeed, it is probable that many of the former may measure three feet in circumference, and the latter two and a half, when they are fully grown.

The manager of the farm, informed me that he raised fifty tons, actual weight, of beets to the acre, last year, and that his crop is much better the present season. He also said that it required but *little more labour to raise fifty tons of beets than fifty bushels of corn*, while the former was quite as good for horses, much better for cattle, and rather better for stock hogs. He also asserted that sucking calves preferred beets, when properly prepared, to milk. Indeed, I could almost select from among fifty-six head of fine Durham cattle, those that had been fed, during the last season on beets. They were not only fatter but smoother, and better grown than those that had been kept on other food.

Although cattle and hogs will eat beets in a raw state, still they are much better when boiled. The apparatus and fixtures used by Mr. Pugh for boiling, or rather steaming food for three hundred hogs, and forty or fifty cows, with other stock, cost about one hundred and fifty dollars, and consumes a quarter of a cord of wood per day.

Among the Durham cattle on the farm of Mr. Pugh, I observed some very fine young males, and among them, Lebanon, an animal of superiour growth and figure.

Mr. P. has not attempted to make sugar from his beets, but if its manufacture is profitable any where from this article, it would certainly be so here, for no soil can produce a better growth. Two hands can prepare the ground, plant, and cultivate five acres of beets in a season, and the product would doubtless yield many tons of saccharine matter."

A PRODUCTIVE PEACH FARM.

Mr. Jacob Ridgeway has a farm near Delaware city, in this county, on which he commenced planting a peach orchard in the year 1831. In the seven years which have elapsed since he commenced the plantation, Mr. Ridgeway has planted one hundred and forty acres—one hundred trees to the acre. The produce of the present year is estimated at one hundred baskets per acre, or fourteen thousand baskets of peaches. The peaches, of which he presented us some specimens, are of the finest kind, large and of delicious flavour. Two schooners are constantly employed in transporting the fruit to the Philadelphia and New York markets, where, we understand, it meets with ready sale at three, four, and five dollars per basket. It is estimated that his peach crop will yield a profit during the present year of *twenty thousand dollars*.

Delaware Paper.

TO PREVENT HORSES BEING TEASED WITH FLIES.

Take two or three small handfuls of walnut leaves, upon which pour two or three quarts of cold soft water, let it infuse one night, and pour the whole the next morning into a kettle, and let it boil for a quarter of an hour, when cold it will be ready for use. Nothing more is required than to moisten a sponge with the liquor, and before the horse goes out of the stable let those parts which are most irritable be smeared over with the liquor, viz., between and upon the ears, the neck, the flank, &c. Not only the lady or gentleman who rides out for pleasure, will derive benefit from the walnut leaves thus prepared, but the coachman, the wagoner, and all others who use horses during the hot months.

THE SILK BUSINESS.

France is considered a silk growing country, yet she does not grow sufficient for her own manufactures and it is said annually imports raw silk to the amount of six millions of dollars.

England, owing to the humidity of her climate, cannot raise the worms to advantage, and for her numerous manufactories is obliged annually to import the raw material from other countries to the amount of seventeen millions of dollars. It is stated that we import annually of raw silk to the amount of about ten millions of dollars, and of the manufactured over sixteen millions.

Unless the United States pushes the culture of the mulberry and raising of cocoons beyond any thing now in operation, many long years must intervene before we can supply the demand of our own markets. Inhabiting, as we do, one of the best climates in the world for manufacturing silk of the best quality, instead of paying ten millions of dollars annually to other nations for the raw material, we ought to export two or three times that amount.

It is said our import of silk stuffs exceeds our export of bread stuffs—why is this? Only because we do not appreciate and improve the means we have. Let our intelligent farmers be convinced that the silk business is profitable, and then we can hope that every exertion will be made to extend the cultivation of the mulberry and raising of cocoons.

It is a matter of regret, that any one should view the subject as a wild project, and say, that although it may be a good business for a few years, if found lucrative, every body will engage in it, and glut the market. We wish the subject could be so represented to our fellow citizens, as to impress them with the importance of examining the subject on the broad scale of greater national importance than any agricultural subject ever yet pursued.

But if doubts and fears shall remain, we only ask them to commence the culture of the mulberry on a limited scale for a few years, not to interfere with any other agricultural pursuit. Let the experiment be made upon some of our almost barren and useless portions of poor, dry, stony, and gravelly soil.

It may be asked, if the silk business can be made more profitable than any crop, why not take the best and richest land?—a fair question indeed, but such land is not best for the Chinese mulberry, and it would be desirable to have every patch of poor, waste, dry land devoted to some useful purpose.

Northampton Courier.

POTATOES.

Lime has been used by some of our farmers in raising potatoes. They find it beneficial, not only to the potato crop, but to the succeeding crops. Its effects are visible for several years. The manner of applying it is, to put a spoonful in a hill after the potatoes are dropped, and cover the lime and potatoes together. Not only is the quantity of the crop increased, but the quality is improved by it.

Potatoes have become, to a considerable extent, an artice of export, and may be reckoned one of the most profitable crops on farms situated near navigable waters. The South will always depend on us for their supply, if we send them a good article. Should the state do any thing to facilitate transportation by canals and railroads, a general benefit will be felt among the farmers for the sale of this article.

They may be raised at a very cheap rate on stubble land. A little lime to assist in decomposing the stubble, is all the manure that is necessary to ensure a good crop, and by planting in straight drills, most of the labour may be performed by a horse. Land may be prepared in this manner for a second crop of wheat. The lime applied to the potatoes is sufficient for the wheat, without another application.

Maine Farmer.

CAUSES OF POVERTY IN THE UNITED STATES.

[Sedgwick's Publick and Private Economy.]

Poverty of farmers in the United States! The reader will smile at the very mention of the name of poverty among our farmers, after seeing how superiour their condition is, to that of the cultivators of the earth in any other portions of it. Let it be remembered, than, that the inquiry here is, not about comparative poverty, but real poverty. And what is meant by real poverty among the farmers? This is meant: that many, and most of them, are destitute of solid comforts and enjoyments, which they might and ought to have.

The property, dignity, and comfort of a farmer will be found, if any where, in his house, out-houses, farm, garden, cattle, tools, and the education of his children.

First, *Education.* The common district schools, where a large portion of the children of farmers in New England receive their education, are kept generally by men in the winter, and by women in the summer. The men's schools, in the town of Stockbridge, average about four months in the year, which is probably about the average of other towns in New England, and this is all the instruction that many farmer's sons get from male instructers, till they are about sixteen years of age, when they generally leave the schools altogether, for the farm, for trades, or business of some kind or other. In some parts of the country, private schools are now growing up, which being supported by subscription, are very superiour to the common district schools, and are attended by the children of the more intelligent class of farmers. The common schools are generally kept in small, cold, and inconvenient buildings, where thirty, forty and sometimes a much larger number, are huddled together, and taught by one master. The masters are often young men, many of them yet students in the colleges, not more than eighteen or twenty years of age. The average wages in these schools are about twelve or fourteen dollars a month, besides board, &c., which is a little more than farmers' hired men get, and less than mechanicks receive. These masters are too young and inexperienced to be qualified for their tasks; and this, then, is one of the most melancholy marks of the poverty of large numbers of American farmers; that their children are wretchedly educated.

Farmers' houses and out-houses.—The old houses of the northern states having generally been built of wood are many of them greatly out of repair, and comfortless. Even in the richer parts of the state of New York, which have not been settled more than forty or fifty years, there are many houses and out-houses in a shameful state of decay, from mere neglect and want of economy. While so many of the wives and daughters of the farmers, are running to the stores for fashionable gewgaws and prefer fine ribbons, to fine farms, the principle of affection for, and pride in the paternal estate, remains uncherished among us—and this is the reason why many farmers after having so long neglected their farms, and buildings are obliged finally to sell them for half the price they ought to bring, and then move to the new states in a beggarly condition. In too many of the farmers' barns, stables and out-houses, there are the same unhappy marks of the poverty of the owner—few, or no contrivances by shelter and otherwise to save manure, or economize in any way, all of which cost money; and this is the farmer's excuse —"that he is too poor to afford such labour-saving improvements." It is the opinion of some farmers at the north, that the produce of their towns might be doubled in ten years, by the proper use of plaster of Paris, and clover-seed; of many it might be greatly increased; but they say that they are too poor to afford the first cost of plaster, which is here, if ground, ten or eleven dollars the ton. This shows the use of property, of capital, of having something on hand that can be laid out for the purpose of making more property, which is the great design of capital.

A good garden is one of the best parts of the economy of a farm, and that which most highly adorns the farmer's condition. But it is a very rare possession among our farmers, and they give no other reason for their destitution in this particular, than that they are too poor to have such a possession. The average size of the farms of Massachusetts has been said to be eighty or a hundred acres. Of these acres the farmer devotes perhaps a quarter, a half, and often not an eighth part of an acre to his garden. There will not be found in one in twenty in New England, a *head* of lettuce, nor any sweet corn, which is so much more healthful for early use than the common corn, nor a cauliflower, or brocoli, nor any variety of peas, beans, &c., suited to the different seasons. As to fruits; there is not a strawberry, raspberry, gooseberry, and often not a tolerable supply of that invaluable fruit the currant.—For any variety of flowers you may look in vain.

His farm and cattle.—Here also is too fatal a proof of the poverty of the farmer. An expense of even a few hundred dollars upon many of these farms would entirely change their aspect. The diligence of the farmer should entitle him to fine breeds of cattle, but how few such do we see!—In the United States, the farmers own nearly all the land; in this sense, they may be said to own the country. In England, a few rich gentleman own the country; and their riches have enabled them to carry refinement in the breed of cattle to a great height. A bull has been sold there for a thousand guineas, and a cow for four hundred. The value of the cattle, sheep, and swine of England has been estimated at one hundred and twenty millions sterling.

Some gentlemen in the valley of the Scioto river, in the state of Ohio, not long since sent *farmers* to England to purchase cattle. It is said that they brought home ten thousand dollars worth of the finest breeds. One cow is reported to have cost seven hundred dollars. Such poverty as we see, would not long dwell among a race of farmers animated by such a spirit; fine cattle to them are worth more than fine capes to their coats. Good breeds of cattle cannot be looked for in a country, where it is still a pretty general practice of the farmer (as in New England) to keep his young horned cattle so poorly fed in the winter, that they are turned to grass in the spring in a starving condition. Any one who will look at them, may see that.—Nothing but the plea of poverty can justify this apparent inhumanity on the part of the farmer. Some few allege, that this practice is good economy in reference to our long winters; but humanity revolts from such treatment of useful animals.

The above is a slight sketch of the condition of many farmers in large portions of the United States. To this might be added many other particulars, such as that considerable numbers are deeply in debt to store-keepers, and others, and that, in too many cases, their farms are fatally mortgaged to banks, insurance offices, &c.

The only object of these statements is to show how the farmers may become more prosperous, and still farther elevate their useful class; their condition in the United States is rapidly improving, and if they can do this much, they can do more

TO MY BROTHER.

BY CHARLES SPRAGUE.

We are but two—the others sleep
  Through death's untroubled night;
We are but two—O let us keep
  The link that binds us, bright.

Heart leaps to heart—the sacred flood
  That warms us, is the same;
That good old man—his honest blood
  Alike we fondly claim.

We in one mother's arms were locked—
  Long be her love repaid:
In the same cradle we were rocked,
  Round the same hearth we played.

Our boyish sports were all the same,
  Each little joy and wo:
Let manhood keep alive the flame,
  Lit up so long ago.

We are but one—be that the bond
  To hold us till we die;
Shoulder to shoulder let us stand,
  Till side by side we lie.

ON CROSSING THE ALLEGHANIES.

The broad, the bright, the glorious west
  Is spread before me now!
Where the gray mists of morning rest
  Beneath yon mountain's brow!
The bound is past—the goal is won—
The region of the setting sun
  Is open to my view—
Land of the valiant and the free,
Mine own Green Mountain land—to thee
  And thine—a long adieu!

I hail thee—valley of the west,
  For what thou yet shalt be!
I hail thee, for the hopes that rest
  Upon thy destiny!
Here—from this mountain height, I see
Thy bright waves floating to the sea,
  Thine emerald fields outspread,
And feel, that, in the book of fame
Proudly shall thy recorded name
  In later days be read.

Yet while I gaze upon thee now,
  All glorious as thou art,
A cloud is resting on my brow—
  A weight upon my heart,
To me—in all thy youthful pride,
Thou art a land of cares untried,
  Of untold hopes and fears;
Thou art—yet not for thee I grieve,
But for the far off land I leave
  I look on thee with tears.

O brightly, brightly, glow thy skies
  In summer's sunny hours!
Thy green earth seems a Paradise
  Arrayed in summer flowers!
But O! there is a land afar,
Whose skies to me are brighter far,
  Along the Atlantick shore,
For eyes, beneath their radiance shine,
In kindlier glances answering mine;
  Can these their light restore?

Upon the lofty bound I stand,
  That parts the east and west;
Before me—lies a fairy land—
  Behind—*a home of rest.*
Here hope her wild enchantment flings,
Portrays all bright and lovely things,
  My footsteps to allure—
But *there*, in mem'ry's light, I see
All that was once most dear to me—
  My young heart's cynosure.

[Louisville Journal.

DISCOURSE ON THE TIMES.

[From the Boston Advocate.]

Two discourses on the Moral Law of Accumulation, delivered by Dr. Wayland, President of Brown University, in Providence, have been published. The profound knowledge of political economy, shown in these discourses, and the happy union of moral and religious obligations, with the right use of the means of accumulation, render them more adapted to produce a good effect upon all classes of the community, than much more laboured and voluminous essays. Every man who reads and understands them, and none can understand and appreciate the admirable lessons of instruction they contain, without being made better.

"I think it will be acknowledged by all that this whole community has for some time past, been pervaded by an excessive avidity for the rapid accumulation of property. In the words of the Scriptures, men have *hastened* to be rich.

"God intends that man should grow rich by adding something to the means of human happiness; and, just in proportion to the amount which we ourselves have thus added, is the amount of our lawful gain. He who produces corn, or wool, or cotton, or iron, or fabricates or prepares them for the purpose of human convenience; or he who transports them from places where they are less wanted; or he who exchanges them for the parties by whom they are produced; or he who devotes his time and his abilities of any sort to the accomplishment of a valuable result, adds something to the means of happiness to the whole; and for his labour, and skill, and capital, in performing this service, he is entitled to a fair remuneration. This remuneration is his means of accumulation. The greater his skill and the more diligent his industry, the greater will be the amount of benefit which he will confer upon the community, and the larger is the recompense to which he is entitled. The stricter his frugality, and the more rigid his self-government, the less will be his expenditure, and the larger his nett revenue. To all the results of his labour, and skill, and frugality, he is fully and fairly entitled; and the more he thus benefits himself, the better is it for him, and the better is it for his neighbour.

"But now let us imagine another case. Suppose every man to become dissatisfied with the rate of accumulation to which I now allude; and that, forsaking his reliance upon the actual productiveness of his own skill and industry, he should betake himself to ascertaining in what manner he might, without fraud, anticipate the gains of his neighbour. If my neighbour hold cotton, or wheat, or iron, or land, which I conceive will rise in value, suppose me to purchase, not that I may use it, or improve it, or increase its value by my own labour, but merely that I may secure to myself, instead of allowing to him, the benefit of the change. Let this desire become universal, and then let the circulating medium be extended sufficiently to afford the necessary facilities for indulging it, and there must ensue an extraordinary rise of prices, not proceeding from any diminution of products, or any increase of consumers; or the discovery of any new value in the products themselves but solely from the passionate anticipations of men concerning the future, and their intense desire to overreach each other. This rise of prices will, c course, yield enormous profits. Enormous profit lead to enormous expenditures. The demand fo every object, either of luxury or convenience, is immense. All kinds of business are prosperous beyond any former example. It seems as if men ha fouud out some new mode of accumulation, and Go had never said to the swelling waves of human desire, thus far thou shalt go and no farther.

"All this is the appearance. But if we strip o the appearance and examine the reality, it will b found, that this mode of acquisition is deceptive i its results, and corrupting in its tendencies.

"It will at once occur to any dispassionate observer, that by all this process there is no real additio to the riches of the community. Neither the buyin nor the selling of property, nor the asking for more or less, adds any thing to its amount or to it value. He who raises a bushel more of wheat tha existed before, has made the world by so much th richer; he who raises none, but asks two pieces c paper for his wheat instead of one, surely is no richer, nor has he enriched at all the community. Henc it is evident, that notwithstanding all this bustle an all this rapid change of ownership, there exists jus as much as is actually produced, and no more. Ther is just the same amount for the whole, and the sam proportion to every individual, as if none of this prosperity had occurred. And hence no one can reall become any richer in this manner without makin somebody else poorer.

"And now, if nothing worse than this should ensue, consider how great must be the waste of tim and talent, of skill and industry. Under the influence of such a temper as I have described, th whole intellectual power of the mercantile community is employed in a labour which adds nothin whatever to wealth, but of which the best result tha can be hoped for, is that every thing in the end wil remain as it was in the beginning. Suppose tha the whole labour and talent, which for the last tw years have been employed in speculation, had bee employed in production, would we not all have bee richer, and would it not have been the better for every individual and for the whole community? It i evident then that this whole labour has been throw away.

"Have not the results to which I have allude very signally followed? Have not all these effort at accumulation resulted in a most lamentable an miserable failure? Would not the whole communit have been now richer by the simple gains of productive industry? Have not the moral evils to which have already spoken also occurred? When befor did we ever hear so many complaints of extortion and so many exclamations against the unjust use o capital? When before has there been witnessed s universal thoughtlessness of God? When were religious men so deeply immersed in worldly cares When did the church number so few converts, an when was the world so generally given over to licentiousness?

"If we have consumed too much and produce too little, the natural remedy is to produce more an consume less. If we anticipated last year the earnings of the present, we must devote the earnings o the present to meet the deficiency. And, hence the greater our industry, and the more scrupulous ou frugality, the sooner will that deficiency be supplied. Let us, then, cheerfully and universally commence a course of industry on the one hand, and of retrenchment on the other. Let every useless and frivolous gratification be abandoned. Let every expenditure be, so far as possible, diminished. Let every one do something more than he has done before toward maintaining himself, and adding to that stock on which we all depend for the means of physical happiness. It is surely time, in a republican government and at such a such a crisis as this, that labour be esteemed honourable. And until it be esteemed honourable, I see not how we shall escape from our present embarrassments."

PRESIDENTIAL ELECTIONS.

There have been, since the organization of our government, *Thirteen Presidential Elections*. The following is a correct statement of the number of votes received by each principal candidate for President and Vice President, at each of said elections; and as it will be found on examination to have been compiled from good authority, it may perhaps be worthy of a place in your columns.

First Election, 1788.—Number of Electors 69. George Washington received 69 votes; John Adams 34,* and John Jay 9. Washington was elected President, and John Adams Vice President.

Second Election, 1792.—Number of Electors 135. George Washington received 132 votes; John Adams 77, and George Clinton 50. Washington and Adams were both re-elected.

Third Election, 1796.—Number of Electors 138. John Adams received 71 votes; Thomas Jefferson 69; Thomas Pinckney 59, and Aaron Burr 30. Adams was elected President, and Jefferson Vice President.

Fourth Election, 1800.—Number of Electors 138. Thomas Jefferson and Aaron Burr received each 73 votes; John Adams 65, and Charles C. Pinckney 64. As there was no choice of President in the College of Electors, the election devolved on the House of representatives, and after balloting thirty-six times, Jefferson was elected by a majority of one State. Burr was elected Vice President.

Fifth Election, 1804.—Number of Electors 176. The present plan of voting separately for President and Vice President was now adopted.

Thomas Jefferson received 162 votes for President, and Charles C. Pinckney 14. George Clinton received 162 votes for Vice President, and Rufus King 14. Jefferson and Clinton were elected.

Sixth Election, 1804.—Number of Electors 176. James Madison received 122 votes President, and Charles C. Pinckney 47. George Clinton received 113 votes for Vice President, and Rufus King 47. Madison and Clinton were elected.

Seventh Election, 1812.—Number of Electors 217. James Madison received 128 votes for President, and De Witt Clinton 89. Elbridge Gerry received 131 votes for Vice President, and Jared Ingersoll 86. Madison and Gerry were elected.

Eighth Election, 1816.—Number of Electors 127. James Monroe received 183 votes for President, and Rufus King 34. Daniel D. Tompkins received 183 votes for Vice President, and John E. Howard 22. Monroe and Tompkins were elected.

Ninth Election, 1820.—Number of Electors 232. James Monroe received 231 votes for President, and Daniel D. Tompkins 218 for Vice President.

Tenth Election, 1824.—Number of Electors 261. Andrew Jackson received 99 votes for President; John Q. Adams 84; Wm. H. Crawford 41; and Henry Clay 37. As neither candidate had a majority, the election was carried into the House, where John Q. Adams having received the votes of 13 states out of 23, was elected President. John C. Calhoun received 192 eleotoral votes for Vive President; N. Sandford 30, and Nathaniel Macon 24. Calhoun was elected Vice President.

Eleventh Election, 1828.—Number of Electors 261. Andrew Jackson received 178 votes for President, and John Q. Adams 82. John C. Calhoun received 171 votes for Vice President, and Richard Rush 83. Jackson and Calhoun were elected.

Twelfth Election, 1832.—Number of Electors 288. Andrew Jackson received 219 votes for President; Henry Clay 49; John Floyd 11, and Wm. Wirt 7. Martin Van Buren received 189 votes for Vice President; John Sargeant 49; Wm. Wilkins 30; Henry Lee 11, and Amos Ellmaker.7 Jackson and Van Buren were elected.

Thirteenth Election, 1836.—Number of Electors 294, (including those of Michigan.) Martin Van Buren received 170 votes for President; William H. Harrison 73; Hugh L. White 26; Daniel Webster 14; and Willie P. Mangum 11. Richard M. Johnson received 147 votes for Vice President; Francis Granger 77; John Tyler 47; and Wm. Smith 23. As neither of the candidates for Vice President received a majority of the electoral votes, and as Richard M. Johnson and Francis Granger received more votes than any other two, the Senate proceeded to elect one of these candidates Vice President. In the Senate, Richard M. Johnson received 33 votes, and Francis Granger 16. Van Buren and Johnson were elected. Cin. Daily Gazette.

Stone Mountain.—This extraordinary elevation may be considered as not only one of the most remarkable mountains in North America, but as one of the greatest natural curiosities in the known world. Imagine a perpendicular wall of solid marble, five or six hundred yards in length, and four hundred yards high, rising in grandeur and sublimity from the plain below. A recent traveller states the circumference to be six miles; and the height twenty-two hundred and fifty feet; and rounding off at the top like a dome. The stone mountain is situated in De Kalb county, Georgia, and is perhaps the most stupendous of the many natural curiosities with which our country abounds.

A woman never appears so truly amiable as in retirement, where her virtues shine with double lustre. Do not idly imagine that by running to publick places you have a better chance of marrying. If a woman is ever so beautiful, being seen too often makes her cheap in the eyes of men. She who is but rarely seen, men covet most to see; and her chance of being happily married is much greater.

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* Until the fifth election, the highest number of votes elected the President, and the next highest the Vice President.

[The Chapel and Scenery, At Arorangi.]

A Narrative of Missionary Enterprises in the South Sea Islands—with Remarks on the Natural History of the Islands, and the Origin, Language, Traditions and Usages of the Inhabitants—by Rev. John Williams, of the London Missionary Society; with several hundred engravings. 8vo. 500 pp. New York. Daniel Appleton & Co. 1837.

THE most dangerous ground, perhaps, yet visited by the missionaries, is the South Sea islands: but even here, their efforts have been crowned with unexampled success. Natives who, but a few years since were bowing before "gods made of wood and stone" are now found erecting churches, and worshipping the God of the Christians, and rapidly advancing toward a state of civilization.

The author of the above work has been a missionary to these islands, and his narrative abounds with interesting incidents. The publishers have politely furnished us with the sheets as far as printed, and also the accompanying engravings, which enables us to give a few extracts.

The building of the chapel exhibited in the above engraving, is thus described:

"On the following sabbath, a congregation of about four thousand assembled; but as the house was a temporary building, and would not accommodate half the people, they took their seats outside. This induced us to determine to erect immediately a place of worship. With this view the chiefs and people were convened, and arrangements made for commencing the building; and so great was the diligence with which the people laboured, that although ill supplied with tools, the house was thoroughly completed in two months. It was one hundred and fifty feet in length, and sixty wide; well plastered, and fitted up throughout with seats. It had six large folding doors. The front windows were made in imitation of sashes, whilst those in the back resembled venetian blinds. It was a large, respectable, and substantial building; and the whole was completed without a single nail, or any iron-work whatever. It will accommodate nearly three thousand persons.

"In the erection of this chapel, a circumstance occurred which will give a striking idea of the feelings of an untaught people, when observing for the first time the effects of written communications. As I had come to the work one morning without my square, I took up a chip, and with a piece of charcoal, wrote upon it a request that Mrs. Williams would send me that article. I called a chief, who was superintending his portion of the work, and said to him, 'friend, take this: go to our house and give it to Mrs. Williams.' He was a singular looking man, remarkably quick in his movements, and had been a great warriour; but, in one of the numerous battles he had fought, had lost an eye, and giving me an inexpressible look with the other, he said, 'take that! she will call me a fool and scold me, if I carry a chip to her.' 'No,' I replied, 'she will not; take it, and go immediately; I am in haste.' Perceiving me to be in earnest, he took it and asked, 'what must I say?' I replied, "you have nothing to say, the chip will say all I wish.' With a look of astonishment and contempt, he held up the piece of wood, and said, 'how can this speak? has this a mouth?' I desired him to take it immediately, and not spend so much time in talking about it. On arriving at the house, he gave the chip to Mrs. Williams, who read it, threw it away, and went to the tool-chest; whither the chief, resolving to see the result of this mysterious proceeding, followed her closely. On receiving the square from her, he said, 'stay, daughter, how do you know that this is what Mr. Williams wants?' 'Why,' she replied, 'did you not bring me a chip just now?' 'Yes,' said the astonished warriour, 'but I did not hear it say any thing!' 'if you did not, I did,' was the reply, 'for it made known to me what he wanted, and all you have to do is to return with it as quickly as possible.' With this the chief leaped out of the house; and catching up the mysterious piece of wood, he ran through the settlement with the chip in one hand and the square in the other, holding them up as high as his arms would reach, and shouting as he went, 'see the wisdom of these English people; they can make chips talk, they can make chips talk!' On giving me the square, he wished to know how it was possible thus to converse with persons at a distance. I gave him all the explanation in my power; but it was a circumstance involved in so much mystery, that he actually tied a string to the chip, hung it round his neck, and wore it for some time. During several following days, we frequently saw him surrounded by a crowd, who were listening with intense interest while he narrated the wonders which this chip had performed."

The following ludicrous effect was produced on one of the islands by the sight of a cat.

"At this time, a ludicrous circumstance occurred which will illustrate the ignorance and superstition of this people. A favourite cat had been taken on shore by one of the teacher's wives on our first visit; and not liking his new companions, Tom fled to the mountains. The house of the priest Tiaki, who had just destroyed his idol, was situated at a distance from the settlement; and, at midnight, while he was lying asleep on his mat, his wife, who was sitting awake by his side, musing upon the strange events of the day, beheld, with consternation, two fires glistening in the door-way, and heard with surprise a mysterious voice. Almost petrified with fear, she awoke her husband, and began to upbraid him with his folly for burning his idol, who, she declared, was now come to be avenged of them. 'Get up and pray, get up and pray,' she cried. The husband arose, and on opening his eyes, beheld the same glaring lights, and heard the same ominous sound. Impelled by the extreme urgency of the case, he commenced, with all possible vehemence, vociferating the alphabet, as a prayer to God to deliver them from the vengeance of Satan. On hearing this the cat, as much alarmed as the priest and his wife, of whose nocturnal peace he had been the unconscious disturber, ran away, leaving the poor people congratulating themselves on the efficacy of their prayer.

"On a subsequent occasion, puss, in his perambulations, went to the district of the Satanees; and as the marae stood in a retired spot, and was shaded by the rich foliage of trees of ancient growth, Tom, pleased with the situation, and wishing to be found in good company, took up his abode with the gods; and not meeting with any opposition from those within the house, he little expected any from those without.

"Some few days after, however, the priest came, accompanied by a number of worshippers, to present some offering to the god, and on opening the door, Tom very respectfully greeted him with a mew. Unaccustomed to such salutations, instead of returning it, he rushed back with terrour, shouting to his companions, 'here's a monster from the deep! here's a monster from the deep!' Upon this, the whole party hastened home, collected several hundreds of their companions, put on their war-caps, brought their spears, clubs, and slings, blackened themselves with charcoal, and thus equipped, came shouting to attack 'poor puss.' Affrighted at this formidable array of war, Tom immediately sprang towards the opened door, and darting through the terrour-stricken warriours, they fled with the greatest precipitation in all directions.

"In the evening, these brave conspirators against the life of a cat were entertaining themselves and a numerous company of spectators with a dance, when Tom, wishing to see the sport, and bearing no malice, came to take a peep. No sooner did he present himself, than the terrified company fled in consternation; and the heroick warriours of the district again armed themselves, and gave chase to this unfortunate cat. But the 'monster of the deep,' being too nimble for them, again escaped their vengeance. Some hours after, when all was quiet, Tom, being disturbed in his residence with the gods, determined unwisely to renew his acquaintance with men; and, in the dead of the night, returned to the house, and crept beneath a coverlet, under which a whole family was lying, and there fell asleep. Unfortunately his purring awoke the man under whose cloth he had crawled, and who, supposing that some other 'monster' had come to disturb them, closed the doorway, awoke the people of the house, and procured lights to search for the intruder. Poor Tom, fatigued with the two previous engagements of the day, lay quietly asleep, when the warriours, with their clubs and spears, attacked him most valiantly and thought themselves singularly brave in putting an end to this formidable 'monster.'"

A contribution of pigs:

"During my previous visit to this island, I was explaining to the people, one evening, the manner in which English christians raised money to send the gospel to heathen countries. On hearing this, they expressed their regret at not having money, that they also might enjoy the privilege of 'helping in the good work of causing the word of God to grow.' I replied, 'if you have no money, you have something to buy money with.' This idea was quite new to them, and they wished to know at once what they possessed which would buy money. I said to them, 'the pigs I brought to your island on my first visit have multiplied so greatly, that all of you have now an abundance; and if every family in the island were to set apart a pig, 'for causing the word of God to grow,' and when the ships come, to sell them for money, instead of cloth and axes, a valuable contribution might be raised.' The idea delighted them exceedingly, and early the next morning, the squeaking of the pigs, which were receiving a particular mark in the ear for this purpose, was heard from one end of the settlement to the other. In the interim, a ship had been there, the captain of which had purchased their pigs, and paid for them most honourably: and now, to my utter astonishment, the native treasurer put into my hands one hundred and three pounds, partly in bills and partly in cash! This was the *first* money they ever possessed, and every farthing of it was dedicated to the cause of Christ!"

The destructive effects of a hurricane on the island of Raratonga are thus described :

"The next day was the sabbath, and it was one of gloom and distress. The wind blew most furiously, and the rain descended in torrents, from morning until night. We held, however, our religious services as usual. Toward evening the storm increased; trees were rent, and houses began to fall. Among the latter was a large shed, formerly used as a temporary school-house, which buried my best boat in its ruins. We had waited with great anxiety during the day to hear from Mr. Buzacott, and as no information had arrived, we entertained a hope that the sea had subsided. But, instead of this, about nine o'clock, a note came to apprize me that it had risen to a most alarming height, that the vessel had been thumping on the stones the whole of the day, and that, at six o'clock, the roof that covered her was blown down and washed away. To complete the evil tidings, the messenger told us that the sea had gone over the bank, and reached the school-house, which contained the rigging, copper, and stores of our vessel, and that if it continued to increase, the whole settlement would be endangered.

As the distance was eight miles, the night terrifically dark and dismal, and the rain pouring down like a deluge, I determined to wait till the morning. We spent a sleepless night, during which the howling of the tempest, the hollow roar of the billows as they burst upon the reef, the shouting of the natives, the falling of the houses, together with the writhing and creaking of our own dwelling, under the violence of the storm, were sufficient not merely to deprive us of sleep, but sufficient to strike terrour into the stoutest heart.

"Before daylight on the Monday morning I set off for Avarua, and in order to avoid walking knee-deep in water nearly all the way, and to escape the falling limbs of trees, which were being torn with violence from their trunks, I attempted to take the sea-side path; but the wind and rain were so violent that I found it impossible to make any progress. I was therefore obliged to take the inland road, and by watching my opportunity, and running between the fallen trees, I escaped without injury. When about half way, I was met by some of my own workmen, who were coming to inform me of the fearful devastation going on at the settlement. 'The sea,' they said, 'had risen to a great height, and had swept away the store-house and all its contents; the vessel was driven in against the bank, upon which she was lifted with every wave, and fell off again when it receded!' After a trying walk, thoroughly drenched, cold and exhausted, I reached the settlement, which presented a scene of fearful desolation, the very sight of which filled me with dismay. I supposed, indeed, that much damage had been done, but I little expected to behold the beautiful settlement, with its luxuriant groves, its broad pathways, and neat white cottages, one mass of ruins, among which scarcely a house or tree was standing. The poor women were running about with their children, wildly looking for a place of safety; and the men were dragging their little property from beneath the ruins of their prostrate houses. The screams of the former, and the shouts of the latter, together with the roaring sea, the pelting rain, the howling wind, the falling trees, and the infuriated appearance of the atmosphere, presented a spectacle the most sublime and terrible, which made us stand and tremble, and adore. On reaching the chapel, I was rejoiced to see it standing; but as we were passing, a resistless gust burst in the east end, and proved the premonitory signal of its destruction. The new school-house was lying in ruins by its side. Mr. Buzacott's excellent dwelling, which stood upon a stone foundation, was rent and unroofed. The inmates had fled, and the few natives who could attend were busily employed in removing the goods to a place of safety. Shortly after my arrival, a heavy sea burst in with devastating vengeance, and tore away the foundation of the chapel, which fell with a frightful crash. The same mighty wave rolled on in its destructive course, till it dashed against Mr. Buzacott's house, already mutilated with the storm, and laid it prostrate with the ground. The chief's wife came and conducted Mrs. Buzacott to her habitation, which was then standing; but shortly after they had reached it, the sea began to dash against it, and the wind tore off the roof, so that our poor fugitive sister and her three little children were obliged to take refuge in the mountains. Accompanied by two or three faithful females, among whom was the chief's wife, they waded nearly a mile through water, which in some places was several feet deep. On reaching the side of the hill, where they expected a temporary shelter, they had the severe mortification of finding that a huge tree had fallen upon and crushed the hut. Again they pursued their watery way in search of a cover from the storm, and at length reached a hut, which was crowded with women and children who had taken refuge in it. They were, however, gladly welcomed, and every possible assistance was rendered to alleviate their distress. Mr. Buzacott and myself had retired to a small house belonging to his servants, which we had endeavoured to secure with ropes, and into which all our books and property had been conveyed. One wave, however, had dashed against it; we therefore sent off a box or two of books and clothes to the mountains, and waited with trembling anxiety to know what would become of us. The rain was still descending in deluging torrents; the angry lightning was darting its fiery streams among the dense black clouds, which shrouded us in their gloom; the thunder, deep and loud, rolled and pealed through the heavens; and the whole island trembled to its very centre, as the infuriated billows burst upon its shores. The crisis had arrived: this was the hour of our greatest anxiety; but 'man's extremity is God's opportunity;' and never was the sentiment expressed in this beautiful sentence more signally illustrated than at this moment, for the wind shifted suddenly a few points to the west, which was a signal to the sea to cease its ravages, and retire within its wonted limits; the storm was hushed; the lowering clouds began to disperse, and the sun, as a prisoner, bursting forth from his dark dungeon, smiled upon us from above, and told us that 'God had not forgotton to be gracious.' We now ventured to creep out of our hiding-places, and were appalled at beholding the fearful desolation that was spread around us. As soon as possible, I sent a messenger to obtain some information respecting my

ting that she had been shivered
ces; but, to our astonishment, he
intelligence, that although the
house, and the vessel were all
ther, the latter had been carried
l lodged amongst a grove of large
veral hundred yards inland, and
ve sustained no injury whatever!
able, I went myself, and was truly
that the report was correct, and
stopped her wild progress, other-
ave been driven several hundred
have sunk in a bog.

ost anxious to return to Ngatan-
concerned and distressed for Mrs.
the height of the storm, I had
senger, to request Mr. Pitman to
ut he returned with the dismal
ages of the tempest were as de-
at Avarua. I therefore hastened
out half way, was met by a na-
rom Mrs. Williams, begging me
ely, as she was apprehensive of
es, from the fright she had sus-
ig at Ngatangiia, the scene of des-
as terrifick as that at Avarua.
, although standing, was unroofed
tered, and Mrs. Williams, with
an, had taken refuge in a small
ging to Pa, the principal chief,
nost the only tenantable dwelling
ement. I was truly thankful to
iams' fears were not likely to be
ndly entertained a hope, that our
spared to us. It appeared that
rrowest possible escape from a
shortly after I left, Mrs. Pitman,
n the next room, perceiving the
vrithe under the pressure of the
. Williams to get up immediate-
sooner risen from the bed, than
ind burst in the end of the dwell-
h a crash upon the very spot on
g two minutes before. Wrapping
kets, they rushed out of the fall-
d in an open space, while na-
seek for a hut or cottage, where
mporary shelter. One of them
saying, that there was a small
longing to one of Mr. Pitman's
they instantly repaired, but be-
t, a cocoanut-tree had fallen upon
two. They were again obliged
exposing themselves to the fury
nts, rather than approach houses
a messenger came running to
a's house was standing, and the
free. On their arrival the chief
y attention, and had his house
possible with ropes; but here,
t in great terrour, by a stately
h was bowing and bending over
succeeded, however, in getting
oung man to climb up and cut off
n they rewarded for his temerity.
had time to collect our thoughts,
situation. The chapels, school-
ses, and nearly all the dwellings of the natives were levelled to the ground. Our property was scattered by the winds and waves, among a people who were formerly the most pilfering of any with whom we were acquainted, and many of whom still retained this propensity. Every particle of food in the island was destroyed. Scarcely a banana or plantain-tree was left, either on the plains, in the valleys, or upon the mountains; hundreds of thousands of which, on the preceding day, covered and adorned the land with their foliage and fruit. Thousands of stately bread-fruit, together with immense chestnut and other huge trees, that had withstood the storms of ages, were laid prostrate on the ground, and thrown upon each other in the wildest confusion. Of those that were standing many were branchless, and all leafless. So great and so general was the destruction that no spot escaped; for the gale veered gradually round the island, and performed most effectually its devastating commission. But in this, as in all God's afflictive dispensations, mercy was mingled with judgement; for had the gale been at its height during the night, or had it lasted much longer, the consequences would have been greatly aggravated."

Singular marriage-ceremony.

"It being rather an unusual thing with natives to have any very pressing engagements to prevent their prompt attention to any object they had in view, we were anxious to learn the cause of the delay; when we learned that he (the chief) had sent some axes, and other things we had given him, and purchased a handsome young wife, who had just arrived, and that the ceremony of marriage was now about to commence. A group of women, seated under the shade of a noble tree, which stood at a short distance from the house, chanted, in a pleasing and lively air, the heroick deeds of the old chieftain and his ancestors; and opposite to them, beneath the spreading branches of a bread fruit-tree, sat the newly purchased bride, a tall and beautiful young woman, about eighteen years of age. Her dress was a fine mat, fastened round the waist, reaching nearly to her ankles; while a wreath of leaves and flowers, ingeniously and tastefully entwined, decorated her brow. The upper part of her person was anointed with sweet-scented cocoanut oil, and tinged partially with a rouge prepared from the turmerick-root, and round her neck were two rows of large blue beads. Her whole deportment was pleasingly modest. While listening to the chanters, and looking upon the novel scene before us, our attention was attracted by another company of women, who were following each other in single file, and chanting, as they came, the praises of their chief. Sitting down with the company who had preceded them, they united with one general chorus, which appeared to be a recital of the valorous deeds of Malietoa and his progenitors. This ended, a dance in honour of the marriage was commenced, which was considered one of their grandest exhibitions, and held in high estimation by the people. The performers were four young women, all daughters of chiefs of the highest rank, who took their stations at right angles, on the fine mats with which the dancing-house was spread for the occasion, and then interchanged positions with slow and graceful movements both of their hands and feet, while the bride recited some of the mighty doings of her forefathers. To the motions of the dancers, and to the recital of the bride, three or four elderly women were beating time upon the mat with short sticks, and occasionally joining in chorus with the recitative. We saw nothing in the performance worthy of admiration, except the absence of every thing indelicate—a rare omission in heathen amusements. We were informed that most of the wives of the principal chiefs were purchased; and that if a sufficient price is paid to the relatives, the young woman seldom refuses to go, though the purchaser be ever so old and unlovely. I prayed that, by the blessing of God upon our labours, the day might speedily arrive when these interesting females should be elevated from this terrible degradation, and, by the benign influence of Christianity, be raised to the dignity of companionship with their husbands, and occupy that station in the social and domestick circle which the females of Tahiti, Rarotonga, and other islands, have attained since the introduction of the gospel."

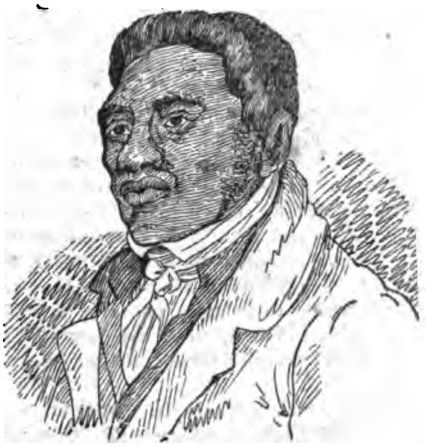
After his return to England the author thus contrasts the condition of the natives as he left them, with that in which he found them.

* * * * * * * * "I found them without a written language; and left them reading in their own tongue the 'wonderful works of God.' I found them without a knowledge of the Sabbath; and when I left them no manner of work was done during that sacred day. When I found them, in 1823, they were ignorant of the nature of christian worship; and when I left them, in 1834, I am not aware that there was a house in the island where family prayer was not observed every morning, and every evening. I speak not this boastingly; for our satisfaction arises not from receiving such honours, but in casting them at the Saviour's feet; 'for his arm hath gotten him the victory,' and 'HE SHALL BEAR THE GLORY.'

"What has been said of Rarotonga is equally applicable to the *whole* Hervey island group; for, with the exception of a few at Mangaia, I believe there does not remain a single idolater, or vestige of idolatry, in any one of the islands. I do not assert, I would not intimate, that all the people are real christions; but I merely state the delightful fact, that the inhabitants of this entire group have, in the short space of ten years, abandoned a dark, debasing, and sanguinary idolatry, with all its horrid rites; and it does appear to me that, if nothing more had been effected, this alone would compensate for all the privations, and labours, and expense by which it has been effected.

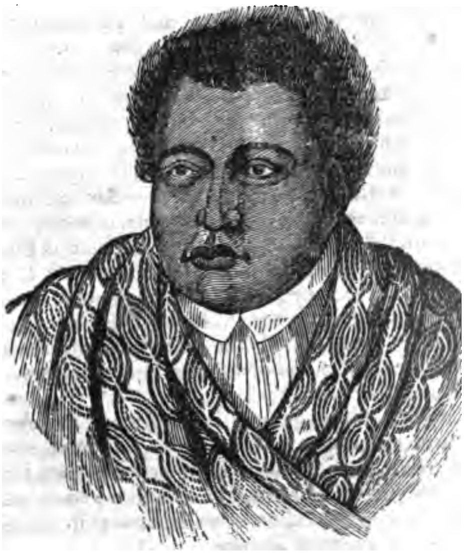
"I am happy to add, that a short time since, I received letters from Messrs. Buzacott and Pitman, which inform me that the people are in a still more pleasing state than when I left them. But I will allow my brethren to speak for themselves. After giving me a full account of Papeiha's prosperity, of whom he sent the accompanying likeness, Mr. Buzacott writes thus, in reference to his own station:—

"'I am truly happy to inform you that we are still in a pleasing state of prosperity. The excitement which commenced when you were with us, still continues, and, although we have been disappointed in some instances, yet our most sangu
pectations have been more than realized.
members of our churches continue steadfa
their zeal, in visiting the sick and endeavou
do all the good they can, affords us much pl
You will be delighted to hear that Makea, we
is a decided christian. He has continued for
time past to manifest a deep concern for his
interests, and gave a most pleasing and satisf
account of his conversion and religious expe
at our last church meeting, when he was reg
admitted to membership.'



[Papeiha.]

"Mr. Buzacott, with a camera-obscura ma
himself, has taken and forwarded to me the a
panying likeness of Makea."



[Makea.]

From the above extracts it will be perceived
the volume before us abounds with useful and i
esting matter. The descriptions of scenery, ch
ter, and incidents, are unusually well written.
facts regarding the natural history and geograp
the islands are new and interesting—and in co
sion we sincerely recommend the volume to the a
tion of all our readers.

YOUNG MEN OF GENIUS.

Alexander, of Macedon, extended his power over Greece, conquered Egypt, rebuilt Alexandria, overrun all Asia, and died at 33 years of age.

Hannibal, was but 26, when, after the fall of his father Hamilcar, and Asdrubal, his successor, was chosen commander in chief of the Carthaginian army. At 27, he captured Saguntum from the Romans. Before he was 34, he carried his arms from Africa into Italy, conquered Publius Scipio on the banks of the Ticinus, routed Sempronius near the Trebia, defeated Flaminius on his approach to the Appenines, laid waste the whole country, defeated Fabius Maximus and Varro, marched into Capua, and at the age of 36 was thundering at the gates of Rome.

Scipio Africanus, was scarcely 16 when he took an active part in the battle of Canæ, and saved the life of his father. The wreck of the Roman cavalry chose him for their leader, and he conducted them back to the capitol. Soon after he was 20, he was appointed pro-consul of Spain, where he took New Carthage by storm. He soon after defeated successively, Asdrubal, (Hannibal's brother,) Mago, and Hano; crossed into Africa, negotiating with Syphax, the Massasyliat king, returned to Spain quelled the insurrection there, drove the Carthaginians wholly from the peninsula, returned to Rome, devised the diversion against the Carthaginians by carrying the war into Africa, was appointed pro-consul of Africa, crossed thither, destroyed the army of Syphax, compelled the return of Hannibal, and defeated Asdrubal a second time.

Charlemagne was crowned king of the Franks before he was 24. At the age of 28 he had conquered Aquitania, and at the age of 29 he made himself master of the whole German and French empires.

Charles the XII., of Sweden was declared of age by the States, and succeeded his father at the age of 15. At 18 he headed the expedition against the Danes, whom he checked; and with a fourth of their numbers, he cut to pieces the Russian army, commanded by the Czar Peter, at Narva—crossed the Dwina, gained a victory over the Saxons, and carried his arms into Poland. At 21, he had conquered Poland and dictated to her a new sovereign. At 24, he had subdued Saxony; at 27 he was conducting his victorious troops into the heart of Russia, when a severe wound prevented his taking command in person and resulted in his overthrow and subsequent treacherous captivity in Turkey.

Lafayette was major-general in the American army at the age of 18; was but 20 when he was wounded at Brandywine; but 22 when he raised supplies for his army, on his own credit, at Baltimore; and but 23 when raised to the office of commander in chief of the national guards of France.

Napoleon commenced his military career as an officer of artillery, at the age of 17. At 24, he successfully commanded the artillery at the siege of Toulon. His splendid and victorious campaign in Italy was performed at the age of 27. During the next year, when he was about 28, he gained battle after battle over the Austrians in Italy, conquered Mantua, carried the war into Austria, ravaged the Tyrol, concluded an advantageous peace, took possession of Milan and the Venetian republick, revolutionized Genoa, and formed the Cisalpine Republick. At the age of 29 he received the command of the army against Egypt, scattered the clouds of Mameluke cavalry, mastered Alexandria, Aboukir, and Cairo, and wrested the land of the Pharaohs and Ptolemies from the proud descendants of the prophet. At the age of 30 he fell among the Parisians like a thunderbolt, overthrew the directorial government; dispersed the council of five hundred, and was proclaimed first consul. At the age of 31 he crossed the Alps with an army and destroyed the Austrians by a blow at Marengo. At the age of 32 he established the Code of Napoleon; in the same year he was elected consul for life by the people; and at the age of 34 he was crowned emperour of the French nation.

William Pitt, the first earl of Chatham, was but 27 years of age, when, as a member of Parliament he waged the war of a giant against the corruptions of Sir Robert Walpole.

The younger Pitt was scarcely 20 years of age when with masterly power he grappled with the veterans of parliament, in favour of America. At 22 he was called to the high and responsible trust of chancellor of the exchequer.

It was at that age when he came forth in his might on the affairs of the East Indies. At 25 he was first lord of the treasury.

Edmund Burke, at the age of 19, planned a refutation of the metaphysical theories of Berkeley and Hume. At 20 he was in the Temple, the admiration of its inmates for the brilliancy of his genius and the variety of his acquisitions. At 26 he published his celebrated satire, entitled "A vindication of Natural Society." The same year he published his Essay on the Sublime and Beautiful—so much admired for its spirit of philosophical investigation, and the elegance of his language. At 29, during the first insanity of George III, he rallied around the Prince of Wales.

George Washington was only 27 years of age when he covered the retreat of the British troops at Braddock's defeat; and the same year was appointed commander in chief of all the Virginia forces.

Alexander Hamilton was a lieutenant-colonel in the army of the Revolution, and aid-de-camp to Washington, at the age of 20. At 25 he was a member of Congress from New York; at 30, he was one of the ablest members of the Convention that formed the Constitution of the United States. At 31 he was a member of the New York convention and joint author of the great work entitled the "Federalist." At 32 he was secretary of the treasury of the United States, and arranged the financial branch of government upon so perfect a plan, that no great improvement has ever been made upon it by his successors.

At the age of 26, Thomas Jefferson was a leading member of the Colonial Legislature in Virginia. At 30, he was a member of the Virginia Convention; at 32, a member of Congress; and at 33, he drafted the Declaration of Independence.

Milton, at the age of 20, had written his finest miscellaneous poems, including his L'Allegro, Penseroso, Comus, and the most beautiful of his Monodies.

Lord Byron, at the age of 20, published his celebrated satire upon the English Bards and Scotch Reviewers; at 24, the two first Cantos of Childe

Harrold's Pilgrimage, indeed, all the vast poetick treasures of his genius were poured forth in their richest profusion, before he was 34 years old; and he died at 37.

Mozart, the German musician, completed all his noble compositions before he was 34 years old, and died at 35.

Raphael, the illustrious painter, by his incomparable works, had acquired the appellation of the "Divine Raphael" long before he arrived at the age of 36.

Pope wrote many of his published poems by the time he was 16 years old, at 20 his Essay on Criticism, at 21 the Rape of the Lock, and at 24 his great work, the translation of the Illiad.

Sir Isaac Newton had mastered the highest elements of the mathematicks, and the analytical method of Descartes before he was 20, had discovered the new method of infinite series of fluxions, and his new theory of light and colours. At 25 he had discovered the principles of the reflecting telescope, the laws of gravitation, and the planetary system. At 30, he occupied the mathematical chair of Cambridge.

DAVENPORT, THE AMERICAN BLACKSMITH—THE ELECTRO-MAGNETICK DISCOVERY.

Thomas Davenport, a native of Vermont where he has resided as a blacksmith at Brandon, Rutland county, until within a few months past, in July 1834, after a year's experiments in electro-magnetism, procured for the first time ever known a rotary motion, with that power, the machinery of which is now exhibiting in New York, and exciting the astonishment of every individual who has seen its operation.

Of the origin of this wonderful discovery, which threatens to make as entire a revolution to the mechanical world as that of Fulton in steam navigation, which it may possibly entirely supersede, the publick are naturally curious to learn some particulars. We communicate them in a more authentick and detached shape than they have hitherto appeared.

In the first place it is necessary to premise, that neither the works of Farraday and Sturgeon of England, who have made much advance it electrical science, nor those of Orsted of Copenhagen, nor Molle of Sweden, nor of Hare and Henry of America, nor of Ampere of France, can convey any notion of the extraordinary development and application of electro-magnetic power discovered by our native American mechanick, Davenport. His name probably in a few years will stand out upon the annals of history as much more prominent than Watt, Arkwright, or Fulton, as they do now above the most ordinary inventors.

Nor let us add can even the interesting and well written descriptions in Silliman's Journal, and elsewhere in our newspapers possibly make intelligible the nature of Mr. Davenport's discovery. In fact, the technical language of science requires an entire new glossary to furnish words to express the thoughts which have sprung up in this new world, whose door has been burst open by the genius of one of our citizens.

Up to the age of thirty, Mr. D. steadily followed his profession of blacksmith. In the summer of 1833, he went as was his custom, from Brandon to a forge at Crown Point, on Lake Champlain, where he was in the habit of purchasing his iron. He there saw a revolving cylinder with magnetized points, for the purpose of separating the particles of iron from the pulverized ore. "How is this magnetized," said Mr. D. to the owner. "By Professor Henry's horse shoe magnet, which you see there," was the reply. It was one of a very small description, weighed about three pounds, and had been purchased of Professor Henry himself at Albany. On an exhibition of its powers, in connection with the galvanic battery, [Hare's] Mr. D. was so struck with this, to him, entirely novel agent, that he immediately demanded the price of the whole apparatus, and purchased the same, and went home absorbed with the useful purposes to which he immediately conjectured it might be applied, and too much engrossed with this dominant thought to remember the load of iron he had come in pursuit of. It is proper to say, that previous to this Mr. D. had become acquainted with the nature of the permanent magnet in his excursion with that and the compass among the iron regions of his native state. On his return, he explained to a friend his conviction that the magnet could be made to procure a *rotary motion.* This friend engaged with him in a series of experiments, which proved abortive, and Mr. D. was shortly after abandoned as a *visionary.* The same results precisely then soon followed, with two other persons. He was thus *finallly* and *fortunately* thrown upon his own resources, and himself was the sole discoverer of this great invention, and the architect of his own reputation.

While prosecuting his researches he read nothing but went onward boldly, under the strong impulses of his own native genius, till he struck out the light which, as we believe, will eternize his name and that of his country.

In allusion to his want of all preliminary education and book knowledge, we are convinced with him, that had his thoughts been entangled and entrammelled with the ideas of other men, his mind never would have been emancipated into the regions of boundless discovery, where it has now reached.

The discovery took place in July, 1834. He first went to Middlebury College, Vermont, and exhibited his production, where it met general approbation. Thence he came to Troy and exhibited it to Professor Eaton, to Princeton and showed it to Prof. Henry, who had himself, without Mr. Davenport's knowledge, procured a short time before a *vibratory* motion up and down with his horse shoe magnet. Mr. Davenport now made some marked improvements in the construction of his machine—principally in changing the poles of the magnets. He then came to exhibit it at Saratoga during the summer of 1836. There he met with Mr. Ransom Cooke, a native of New Haven county, Connecticut, who taking a deep interest in the magnitude of the discovery immediately became associated with Mr. Davenport in advancing it to perfection, and obtaining for it the approbation of the publick.

In concurrence unanimously we believe with all who have witnessed the operation of this extraordinary and simple apparatus, and listened to the lucid and eloquent explanation of Mr. Cooke we confess our utter amazement at the prodigious change which it manifestly foretells in the application of an entire new and immeasurable agent of mechanical power;

and at the same time, while we see and admire, acknowledge ourselves for want of language to sustain us, utterly incompetent to impart any correct conception of this marvellous invention to our readers. All we can say is, "go and be convinced."

Description.—If we were to attempt to give our readers some faint notion of this machine, we would say that it consists of a wheel composed of two iron semicircular arcs, cut across so as to interrupt their formation into a complete circle. That within these are two iron bars or shafts, crossing at right angles, bearing smaller segments of circles on their extremities, nearly touching, as they revolve, the above outer circle which is fixed. The whole of these are horizontal and covered with silk, and then wound round closely and spirally with copper wire, the wire itself covered with cotton and varnished. On the upright shaft below are two small corresponding semicircular arcs, cut as above. Now these are all connected by two flat copper wires, which lead to Hare's galvanic battery of concentrick copper and zinc plates, in a solution of sulphate of copper. Those generate the electric stream, like fuel to a fire-engine, and it is by the two upright wires that touch the circle below, as their ends alternately rub in the rotary motion against the inside of the two semicircular arcs into which that fixed circle is divided, that the extremities of the semicircular pieces above are alternately made to change their positive and negative poles by the ascending current of galvanism—and thus the principle of repulsion and attraction made to act in concert on the four segments of the shafts above described—keeping up by the magnetization produced a swift rotary motion, which in this machine raises two hundred pounds, one foot in a minute. So rapid is the change of poles and the electric velocity of the stream of galvanism, that it makes thirty-two thousand revolutions around the wires in a minute. It is a sublime but not wild idea of Mr. Cooke, that a ship's bottom covered with suitable plates and the ocean for its bath, may drive herself along with incredible velocity—at the same time generating abundance of hydrogen to light her onward on the deep. Evening Star.

THE ANTS.

The ants as a tribe are almost equally interesting with that of the bees, for their wonderful industry. They are universal collectors; everything that comes in their way, whether animal or vegetable, living or dead, answers their purpose; and the paths to their nests are always darkened with the busy crowds that are moving to and fro. Their great function seems to be to remove everything that appears to be out of its place, and cannot go about its own business. I have seen several of them dragging a half-dead snake, about the size of a goose-quill. They do not, however, like the bees, usually store up their provision, but they will imbibe sweet juices from fruits and also from the plant-lice, which may be called their cows. However, almost all their care and labour are connected with the nurture and sustenance of their young.

I am indebted to the kindness of Lieutenant Colonel Sykes, of the Bombay army, for some interesting observations upon three species of ants, particularly one, which, from making its nests on the branches of trees, is called the *tree-ant*, singularly exemplifying the extraordinary instincts of these laborious and provident insects.

The tree-ant inhabits the Western Ghauts, in the collectorate of Poona, in the Deccan, at an elevation of from two thousand to four thousand feet from the level of the sea. It is of a ferruginous colour, two tenths of an inch in length; the head of the neuter disproportionably large; the thorax is armed posteriorly with two sharp spines. When moving, the insect turns the abdomen back over the thorax, and the knotty pedicle lies in a groove between the spines. The male is without the spines.

These ants are remarkable for forming their nests called by Marattas *moongeara*, on the boughs of trees of different kinds; and their construction is singular both for the material and the architecture, and is indicative of admirable foresight and contrivance; in shape they vary from globular to oblong, the longest diameter being about ten inches, and the shortest eight. The nests consist of a multitude of thin leaves of *cow-dung*, imbricated like tiles upon a house the upper-leaf formed of one unbroken sheet, covering the summit like a skull-cap. The leaves are placed one upon another, in a wavy or scalloped manner, so that numerous little arched entrances are left, and yet the interiour is perfectly secured from rain. They are usually attached near the extremity of a branch, and some of the twigs pass through the nest. A vertical section presents a number of irregular cells, formed by the same process as the exteriour. Toward the interiour the cells are more capacious than those removed from the centre, and an occasional dried leaf is taken advantage of to assist in their formation. The nuseries for young broods in different stages of developement are in different parts of the nest. The cells nearest the centre are filled with very minute eggs, the youngest members of the community; those more distant, with larger eggs,* mixed with leaves; and the most remote, with pupes near disclosure. In fact, in these last cells only were found winged insects. The female is in a large or royal cell, near the centre of the nest; she is about half an inch long, of the thickness of a crow-quill, white, and the abdomen has five or six brown ligatures around it like the female of the white ants; the head is very small, and the legs mere rudiments; she is kept a close prisoner, and incapable of motion in her cell; a circumstance in which these appear to approach the white ants, and which indicates that they should form a distinct genus.

There was no store of provisions in the nest: they were indebted therefore for their support to daily labour. We may gain some idea of their perseverance when we consider that the material of which the nest is formed—cow-dung—must have been sought for on the earth, and probably carried from a considerable distance up the trees.

Kirby's Bridgewater Treatise.

We write our mercies in the dust, but our afflictions we engrave in marble; our memories serve us too well to remember the latter, but we are strangely forgetful of the former.—*Bishop Hall.*

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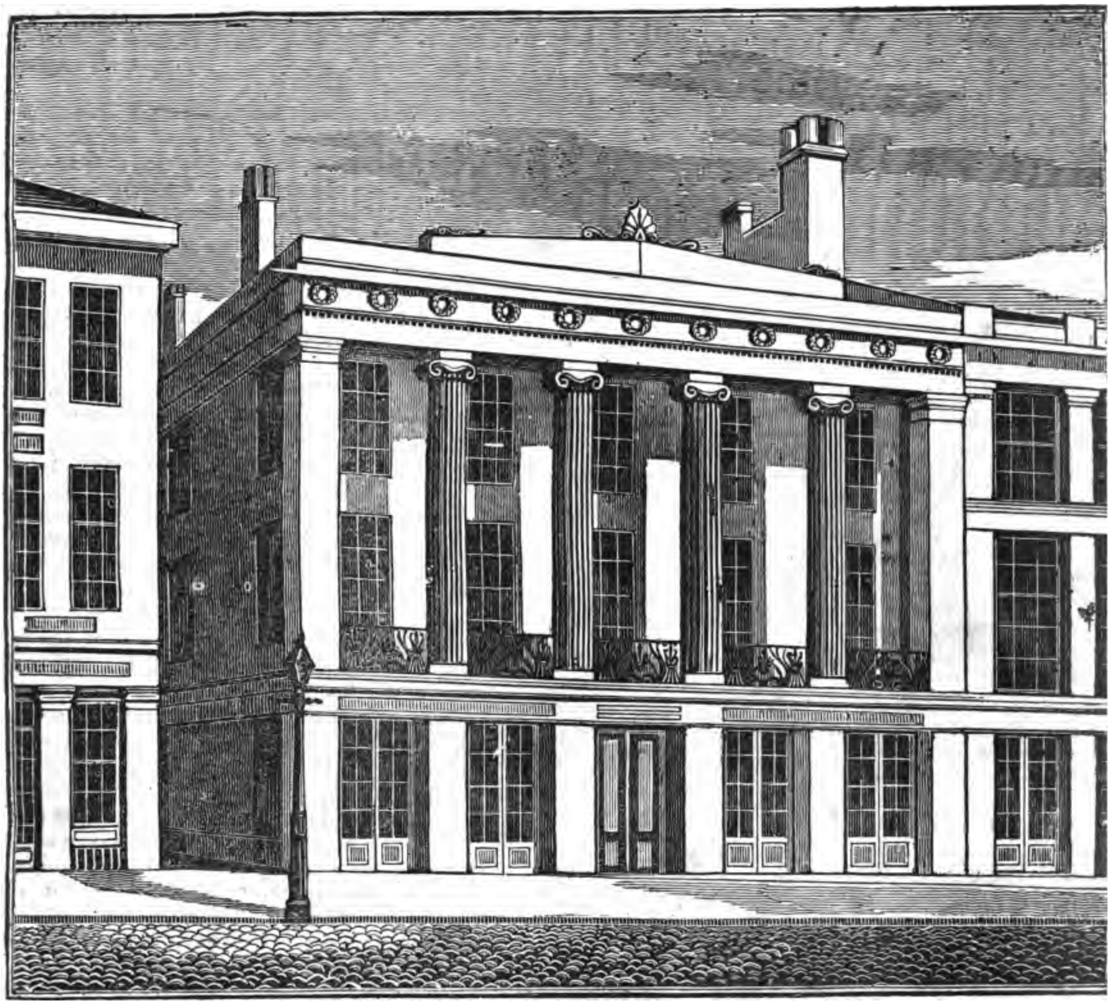
* It should seem from this that the eggs grow.



[View of Suffolk Bank, State Street, Boston.]

SUFFOLK BANK.

All who have visited State street, within the last year or more, must have noticed the elegant front of the Suffolk bank, with its range of granite pillars, forming perhaps the most splendid object in that beautiful portion of our city. The edifice occupies, we believe, the site of the ancient custom-house, and looks down upon the spot where the first American blood was shed by the hands of the British soldiery. It may therefore be said to throw its shadow across the very tract of ground, where the Revolution—the progress and consequences of which were to shake the world—began its career of violence. No succession of events, no brilliant nor mournful vicissitudes of our history, can obliterate the remembrance of what once occurred there, nor prevent this spot from being famous, so long as posterity shall feel an interest in the deeds and sufferings of their fathers. The massacre, if not of primary importance in itself, became so by the use which was made of its anniversary, for many years afterward, in kindling up the spirit of the people, and renewing as it were, the traces of their kindred blood upon the stones of King street. The event itself was little more than a riot; but it gave a mighty impulse to a revolution. When the former building was taken down, therefore, it might not have been undesirable to appropriate a part of its site to an historick monument, or to have connected such a design with the modern edifice, so that no stranger, nor school-boy should pass through the street, without being aware that his feet were treading now where the blood-tracks once had been. It would have been in consonance, we think, with the character of New England, to associate a memorial of this nature with the daily business of the people, and to consecrate even the exchange by some architectural or sculptural device, which should point to the past, as surely as the clock on the old state-house points to the noontide hour.

But we have gone somewhat astray from the proper subject of our article. The Suffolk bank was erected in the course of the year 1834. The cost of the carpenter's work, as we learn from a copy of the survey-bill, was more than eight thousand dollars, and the net cost of the granite, furnished by the railway company, was ten thousand, five hundred dollars. The entire cost of the edifice, in its finished state, is estimated at about forty thousand dollars. The architect was Isaiah Rogers, Esq., to whom the country is indebted for the designs of several of its most admired structures.

American Magazine.

POPULAR MEDICAL OBSERVATIONS.

BEDS.

MANY, perhaps, who rank "the downy couch" high upon their list of indispensable comforts, will be surprised to learn that writers on the means of preserving health, have almost unanimously, included it among the means calculated to rob the system of its due degree of vigour.

In youth, especially, feather-beds, like every other species of luxury, by causing a premature development of the system, without strength proportionate to the rapidity of its growth, often lay the foundation for many of those diseases by which multitudes are consigned to an early grave.

Even in persons of maturer years, by the undue degree of heat they accumulate around the body during sleep, and the profuse perspiration thence induced, in the milder seasons of the year, their tendency is to enervate the constitution, and lay it open to serious impressions from trifling degrees of cold.

A matrass composed of some soft and elastick material, as hair or moss, ought, therefore, to be invariably preferred. The latter, with a proper amount of covering, will be found sufficiently warm for health and comfort, during even the severest nights of winter.

On a former occasion, we attempted to show the susceptibility of infants to the influence of cold; hence, it might be supposed that for them, a featherbed would be the most appropriate; and this opinion has been attempted to be supported by a reference to the instinct of animals, among which "all that bring forth a feeble offspring prepare a soft bed for their reception—brood them with their wings, or clasp them to their bosom for the sake of warmth." It is certainly true, that during infancy a greater degree of warmth is at all times demanded than is necessary, or would be proper, in after life; but, as an infant should never be allowed to sleep alone, it can always be preserved of a sufficient temperature, without having recourse to the doubtful expedient of subjecting it to immersion in a bed of feathers.

Doctor Darwin has advised that young children "should not lie on *very hard* beds, as it may occasion them to rest on too few parts at a time, which hardens these parts by pressure, and prevents their proportionate growth." A bed, such as is here described, would most undoubtedly be improper at any period of life. There is a very material difference, however, between a soft and elastick matrass, and a bed so hard as to occasion uneasiness to the parts with which it is in contact. From sleeping on the former, even the most delicate need not be deterred by any apprehensions of the injurious consequences to which the doctor alludes.

If ever feather-beds be admissible, it is in the case of the aged, who are nearly as susceptible to the influence of cold as infants; to such, therefore, a warm bed is often a matter of indispensable comfort.

Feather-pillows are not less injurious than featherbeds. By preserving the head of an immoderate warmth, they are apt to induce catarrhs, and, in the young, may become the remote or exciting cause of inflammation in the ear—eruptions—pain of the head, or even more serious diseases. For the same reason, all coverings for the head at night, excepting in the instance of females who are accustomed to wear a cap during the day, are productive of bad effects. Children, therefore, of both sexes, should be accustomed from an early age to sleep with the head bare—the covering with which nature has, in general, so plentifully supplied this portion of the body, being amply sufficient to protect it from cold.

After what has been said above, upon the injurious tendency of subjecting the body to an undue degree of heat, during the period of repose, cautions against an excess of bed-clothes would appear unnecessary. It is all-important that the body be covered with a sufficiency of clothing to preserve it comfortably warm; and this may be effected during health, and in individuals accustomed to exercise, by fewer blankets, coverlets, and *comfortables* than many are accustomed to pile upon the bed.

So injurious is an excess of heat, during repose, esteemed by Dr. Beddoes, that he has advised, and with great propriety, that young persons, especially when they present symptoms of languor and debility, or complain of unrefreshing sleep, should be examined when in bed, "and if found too warm, awakened without compunction." The bed-clothes should then be thrown off, "or if the dry heat of the surface be considerable," he adds, "it will be best to walk up and down the room, in a dress so contrived as to guard the extremities from chill, while it permits the residue of the body to be freely ventilated." Cool rooms—matrasses, and light bedclothes, will in all cases prevent the necessity of having recourse to the expedient here directed.

A proper night-dress is an object of no little importance. A loose flannel gown for winter, and one of muslin for summer, will be found the most proper, more especially for children. No part of the clothing worn during the day ought, in fact, to be retained during the night. Those, in particular, who are accustomed to wear flannel, will find it advantageous to dispense with it whilst in bed—or to exchange it for an undress of cotton. Whatever dress is adopted, it should be free from every species of ligature, particularly at those parts which encompass the neck or the extremities. This is an all-important caution, from a neglect of which serious injury has repeatedly resulted.

Closely shrouding a bed with curtains, is one of those numerous instances in which the requisitions of fashion are found to be opposed to health. By preventing a free circulation of the air, they oblige the individual who reposes within them, to breathe an atmosphere vitiated by repeated respiration. They become likewise receptacles for fine particles of dust, which are liable to be inhaled during sleep, whenever disturbed by the motion of the curtains or of the bedstead: this alone, according to Willich, is a cause to which many young persons may refer the first development of a consumptive attack.

Equally pernicious is the practice of sleeping with the face enveloped in the bed-clothes, as well as that most ridiculous custom, so prevalent in this country, of suspending a curtain over the front of an infant's cradle.

Their own feelings might be supposed sufficient to induce all to assume in bed that position, in which every portion of the body will be left the freest from constraint: yet in the case of children, some cautions may be necessary, in order to prevent an awkward position from being indulged in, calculated to produce a prejudicial effect upon the symmetrical growth and perfect development of the system. Hence it is prudent, when young persons lie upon their backs, to reduce the size of the pillows, in order to guard against a contortion of the spine; while lying on the side requires pillows sufficiently large to fill up the space between the head and point of the shoulder. A constrained position, if it have no other bad effect, is a certain preventive to sound and refreshing sleep.

Beds should never be placed upon the floor: it is well known, that in all apartments occupied by living beings, the inferiour portions of the atmosphere are always the most impure. The most wholesome situation for the bed is in the middle of the room, and raised some feet from the floor. From the vitiated state of the atmosphere immediately above the latter, and the great importance of a free ventilation, the practice of placing the children's bed beneath another bedstead during the day, cannot be too severely reprobated.

MAXIMS FOR PARENTS.

1. If consumption has prevailed in either of your families, use the earliest precautions to prevent your children falling victims to the same disease.

2. Though consumption may not have been common on the side of either, yet precaution is not the less important. Two or three neglected colds in winter, or a cutting blast in spring, with improper clothing, may, in an infirm constitution, securely seat the relentless destroyer—at the best, wretched health will be a certain consequence.

3. When they who *must* be ignorant of the essential difference between a common cold and consumption, boast of their cures, hear, but heed them not: ask this question of your own common sense—*what experience or inspiration can instruct such pretenders?*

4. It is wise to check *a cold* the first week; but much wiser the first four-and-twenty hours.

5. Attempt not the treatment of your own, or your children's *colds*—lest, what may in reality have been, in the first instance, a *trifling* disease, should by your mismanagement, be converted into a confirmed *consumption*.

6. All remedies which *do no good*, in either colds or consumptions, invariably *do a very great deal of harm*.

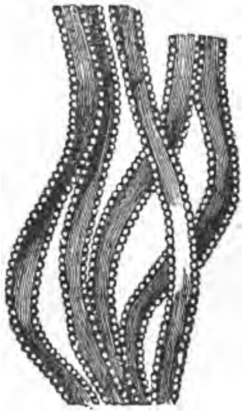
7. A strictly sober life, regular, active exercise, and a cheerful and contented mind, are the most certain means by which those predisposed to consumption, may escape its attack, and preserve their lives to an advanced period.

8. The most certain means by which the predisposed, even when guilty of no intemperance, may invite the attack of their lurking enemy, is a plentiful use of pectoral balsams, balms of life, lung-restorers, cough-lozenges, or indeed any of the list of the certain cures in the newspapers.

Journal of Health.

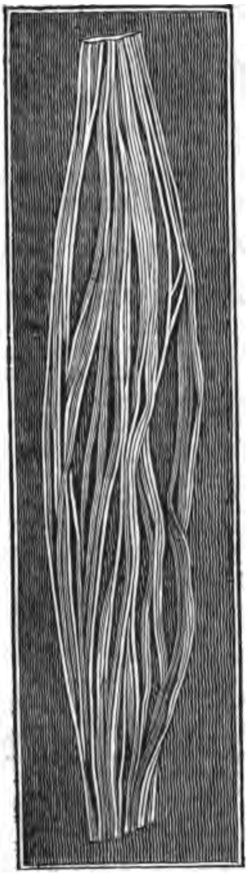
THE HUMAN BODY—No. V.

The last primary tissue, termed the NERVOUS, is equally distinct in nature and peculiar in property. It consists of a soft and pulpy matter, of a brownish white colour. According to some, the nervous, like the muscular pulp, is composed of minute globules, arranged in the same manner like a string of pearls; according to others, it consists of solid elongated threads, of a cylindrical form, differing in thickness from that of a hair to the finest fibre of silk. The pulp, whatever its form of aggregation, is inclosed in a sheath of delicate cellular tissue. This external or containing membrane is called the neurilema, or the nerve-coat; the internal or contained substance, the proper nervous matter, is termed the nerve-string. The nerve-string, enveloped in its nerve-coat, constitutes the nervous filament. As in the muscle, so in the nerve, many filaments unite to form a fibre, many fibres to form a fasciculus, and many fasciculi to form the large cord termed a nerve. Moreover, as in the muscle, so in the nerve, the filament, the fibre, the fasciculus, the nervous cord itself, are enveloped each in its own distinct sheath of cellular membrane; but the arrangement of the nervous fibres differs from that of the muscular in this, that though the nervous fibres are placed in juxtaposition, yet they do not, like the muscular, maintain through their entire course a parallel disposition, but cross and penetrate each other, so as to form an intimate interlacement.



[Ultimate fibres of nerve, very highly magnified; showing the strings of globules of which they consist.]

The nervous pulp is at least as liberally supplied with blood-vessels as the muscular; the vessels are spread out upon the nerve-coat, in which they divide into innumerable branches of extreme minuteness, the distribution of which is so perfect, that there is not a particle of nervous matter which is not supplied both with an arterial and a venous vessel.



[Nervous fibres, deprived of their neurilema and unravelled, showing the smaller threads, or filaments, of which the fibres consist.]

Hence the neurilema is not merely a sheath containing and protecting the nervous pulp, but it affords an extended mechanical surface for sustaining the arterial vessels, from which the pulp is probably secreted, and certainly nourished.

Albumen, in conjunction with a peculiar fatty matter, constitutes the chief proximate principles of which the nervous tissue is composed. To these are added a small proportion of the animal substance termed osmazome, a minute quantity of phosphorus, some salts, and a very large proportion of water; for out of one hundred parts of nervous substance, water constitutes as much as eighty. Its peculiar vital property is sensibility; and as all motion depends on the contractility of the muscular fibre, so all sensation depends on the sensibility of the nervous substance.

Such are the primary tissues, or the several kinds of organized matter of which the body is composed; and from this account it is obvious that they consist of three only—namely, the concrete matter forming the basis of membrane, the pulpy matter forming the proper muscular substance, and the pulpy matter forming the proper nervous substance. Of these three kinds of animal matter the component parts of the body consist. In combining to form the different structures, these primary substances are intermixed and arranged in a great variety of modes; and from these combinations and arrangements results either an organ, a system, or an apparatus.

As filaments unite to form fibres, and fibres to form tissues, so tissues unite to form ORGANS: that is, bodies having a determinate size and figure, and capable of performing specifick actions. The cellular, the muscular, and the nervous tissues are not organs; membranes, muscles, and nerves are organs. The tissue, the simple animal substance, is merely one of the elements of which the organ is composed; the organ is compounded of several of those simple substances, arranged in a determinate manner, and moulded into a given shape, and so constituting a specifick instrument. The basis of the muscle is muscular tissue; but to this are added, invariably, membrane, often tendon, and always vessels and nerves. It is this combination that forms the specifick instrument called a muscle, and that renders it capable of performing its specifick action. And every such combination, with its appropriate endowment, constitutes an organ.

Organs are arranged into groups or classes, according as they possess an analogous structure and perform an analogous function; and this assemblage constitutes a SYSTEM. All the muscles of the body, for example, whatever their size, form, situation, or use, have an analogous structure, and perform an analogous function, and hence are classed together under the name of the muscular system. All the bones, whatever their figure, magnitude, density, position, or office, are analogous in structure and function; and hence are classed together under the name of the osseous system. For the same reason, all the cartilages, ligaments, vessels and nerves, form respectively the cartilaginous, ligamentous, vascular and nervous systems.

An APPARATUS, on the contrary, is an assemblage of organs, it may be differing widely from each other in structure, and exercising various and even opposite functions; but all nevertheless concurring in the production of some common object. The apparatus of nutrition consists of the organs of mastication, deglutition, digestion, absorption, and assimilation. Among the individual organs which concur in carrying on these functions may be reckoned the lips, the teeth, the tongue, the muscles connected with the jaws, the gullet, the stomach, the duodenum, the small intestines, the pancreas, the liver, the lacteal vessels, the mesenterick glands, and the lungs. Many of these organs have no similarity in structure, and few have any thing analogous in function; yet all concur, each in its appropriate mode and measure, to the conversion of the aliment into blood. In the apparatus of respiration, in that of circulation, of secretion, of excretion; in the apparatus of locomotion, in the apparatus of sensation, and more especially in the apparatus of the specifick sensations—vision, hearing, smell, taste, touch, organs are combined which have nothing in common but their concurrence in the production of a common end: but this concurrence is the principle of their combination; and the individual organs having this conjoint operation, taken together, constitute an apparatus.

A clear idea may now be affixed to the terms structure and organization. Structure may be considered as synonymous with arrangement; the disposition of parts in a determinate order; that which is constructed or built up in a definite mode, according to a determinate plan. The arrangement of the threads of the cellular web into areolæ or cells; the combination of the primary threads into fibres or laminæ; the disposition of the muscular pulp into filaments, placed parallel to each other; the investment of the filaments in membraneous sheaths; the combination of the filaments, included in their sheaths, into fibres; the aggregation of fibres into fasciculi; and the analogous arrangement and combination of the nervous pulp, are examples of structure. But when those structures are applied to particular uses; when they are so combined and disposed as to form a peculiar instrument, endowed with a specifick function; when the cellular fibres, for example, are so arranged as to make a thin, dense, and expanded tissue; when to this tissue are added blood-vessels, absorbents, and nerves; when, in a word, a membrane is constructed, an organ is formed; when, in like manner, to the muscular and the nervous fibres, arranged and moulded in the requisite mode, are added blood-vessels, absorbents, and nerves, other organs are constructed capable of performing specifick functions: and this is organization—the building up of organs—the combination of definite structures into special instruments. Structure is the preparatory process of organization; the one is the mere arrangement of the material; the other is the appropriation of the prepared material to a specifick use.

The term organization is employed in reference both to the component parts of the body, and to the body considered as a whole. We speak of an organized substance and of an organized body. An organized substance is one in which there is not only a definite arrangement of its component parts, (structure,) but in which the particular arrangement is such as to fit it for accomplishing some special use. Every organized substance is therefore essentially a special organ; limited in its object it may be, and perhaps only conducive to some farther object; but still its distinctive character is, that it has a peculiar structure, fitting it for the accomplishment of some appropriate purpose. On the other hand, an organized body is a congeries of organs—the aggregate of the individual organs. Between the individual parts of the organized body there is so close a relation, that no one of them can be removed or injured, or in any manner affected without a corresponding affection of the whole. The action of the heart cannot cease without the cessation of the action of the lung; nor that of the lung without that of the brain; nor that of the brain without that of the stomach; in a word, there is no organ in whatever distant nook of the system it be placed, or however apparently insignificant its function, that is not necessary to the perfection of the whole. But into whatever number of portions an unorganized body may be divided, each portion retains the properties of the mass, and constitutes in itself a perfect existence; there being no relation between its individual parts, excepting that of physical attraction: on the contrary, each component part of an organized body, being endowed with some appropriate and specifick power, on the exercise of which the powers of all the other parts are more or less dependent, the whole must necessarily suffer if but one part fail.

The leaves of the lettuce, rose, bramble, dandelion, hop, and fig, will keep silk worms alive, though they will not enable them to produce silk.

THE MERCHANT OF SAVANNAH.

[We read with regret in the New York papers of the early part of September, of the sudden death of William Gaston, Esq., merchant of Savannah, Geo. while on a visit to that city. That distinguished naturalist John J. Audubon, in his "Birds of America," Vol. II., relates the following circumstance; which exhibits the character of Mr. Gaston in its proper light. The death of such a man is a publick loss.]

"I left the little port of St. Augustine, in East Florida, on the fifth of March, 1832, in the packet schooner, the Agnes, bound for Charleston. The weather was fair, and the wind favourable; but on the afternoon of the second day, heavy clouds darkened the heavens, and our sails hung flapping against the masts. Nature, with an angry aspect, seemed to be breathing for a moment, before collecting her energies, to inflict some signal punishment on guilty man. Our captain was an old and experienced seaman. I alternately watched his eye and the distant cloud; both were black, firm, and determined. Satisfied as to our safety, the vessel being perfectly sound, and the crew composed of young active men, I determined to remain on deck, and witness the scene that was about to present itself. The rest of the passengers had withdrawn when the cloud approached the vessel. The captain went up to the helmsman, and in a twinkling the sails were furled excepting one, which was so closely reefed, that it no longer resembled its former self. In another minute, down came the blast upon us, sweeping the spray over the vessel, and driving her along at a furious rate. It increased; all on board were silent; but onward, unscathed, sped the Agnes, driving through the snow-topped waves. I cannot tell you at what rate we were carried by the gale, but at the end of a few hours, the blue sky again appeared, and the anchor was dropped in the mouth of the Savannah river.

Landing there, I presented my credentials to an officer of the engineer corps, who was engaged in building a fort. He received me with great politeness, invited me to spend the night at his quarters, and promised to have his barge ready at dawn to convey my party to Savannah We, however, accepted only the proffered favour of the boat, and having purchased some "shads," returned to the Agnes, where we slept.

The morning was beautiful, and we felt cheerful and buoyant as we ascended the stream in the barge. Thousands of canvass-backed ducks swam gracefully in pairs over the broad waters; from the adjoining rice-fields rose myriads of grakles, redwings, and ortolans, as we approached the shores, while now and then the great heron opened its broad blue wings, and with a hoarse scream rose slowly into the air. Presently we passed a ship at anchor, and now opened on our view the city of Savannah, where we soon landed.

Repairing to a hotel, I immediately took a seat in the mail, in order to proceed directly to Charleston; but happening to have a letter of introduction from the Rathbones, of Liverpool, to a merchant in the city, to whom I had already written, and to whose care I had several times taken the liberty of consigning my baggage-trunks, I resolved to wait upon him, and return him my thanks. In the company of a gentleman, who kindly offered to guide me, I therefore proceeded, and was fortunate enough to meet him in the street. The merchant took my arm under his, and as we proceeded, talked of the many demands of money made on him for charitable purposes, the high price of the "Birds of America," and his inability to subscribe for that work, concluding with telling me, that he much doubted if even a single purchaser could be got in Savannah.

My spirits were sadly depressed, for my voyage to the Floridas had been expensive and unprofitable, not having been undertaken at the proper season; and I confess I thought more of my family than of what the gentleman said to me. However, we reached his counting-house, where I met with Major Le Conte, of the United States army, with whom I was previously acquainted. Our conversation turned on the difficulties which authors have to encounter even in their own country. I observed that the merchant was extremely attentive, and at length seemed uneasy. He rose from his seat, spoke to his clerk, and sat down again. The Major took his leave, and I was about to follow him, when the merchant addressing himself to me, said he could not conceive why the arts and sciences should not be encouraged by men of wealth in our country. The clerk now returned, and handed him some papers, which he transferred to me, saying, "I subscribe to your work; here is the price of the first volume; come with me, I know you now, and I will procure you some others; every one of us is bound to you for the knowledge you bring to us of things, which, without your zeal and enterprise, might probably never have reached us. I will now make it my duty to serve you, and will be your agent in this city. Come along."

'Thus, poor Audubon, art thou alternately transported from a cold to a warm climate, from one mood to another, desponding this morning, and now buoyant with the hopes inspired by this generous merchant!" Such, reader, were the thoughts that filled my mind, along with many others; for I thought of you also, and of my work then going on in England, under the care of my excellent friend J. G. Children, Esq., of the British Museum. The merchant took me back to the hotel, when he desired me to open the few drawings I had with me, and lay them, as I usually do, on the floor. He then went off in search of subscribers. I received three visits from the worthy soul, on each of which he was accompanied by a gentleman, of whom two subscribed, the merchant himself paying me the price of a copy of my first volume for each of them. Others who he thought might have met my wishes in the same agreeable way, were absent from town. The time of my departure having arrived, he accompanied me to the ferry-boat, when I bade him adieu with feelings of gratitude which I found it utterly impossible to express.

Travelling through the woods, already rendered delightfully fragrant, by the clusters of yellow jessamines that bordered them, I arrived in safety at Charleston, where I had the happiness of finding all my friends well. The next mail brought me a remittance from Savannah, and an additional name to my list of subscribers; and before the week was ended, two checks on the branch bank of the United States came to me with two more names.

Leaving Charleston some time after, I revisited the Floridas, crossed the whole of the Union, went to Labrador, and in October, 1833, returned to my starting-place, when I wrote to my generous friend at Savannah, announcing to him my intention of sailing for Europe. By return of post, I received the following answer:—"Three of your subscribers are now, alas! dead; but I had taken the precaution to insure the continuation of their subscription for your works. I have called on their executors, who at once have paid over to me their respective amounts for the second volume of the 'Birds of America;' and I now feel great pleasure in enclosing to you a bill for the whole amount, including mine for the same volume, payable in London at par."

Some weeks ago I had the pleasure of forwarding the volumes wanted at Savannah, which I hope have reached their destination in safety; and here let me express my gratitude towards the generous merchant, who, on being made aware of the difficulties which men have to encounter whose success in their pursuits tends to excite the malevolent feelings of their competitors, nobly resolved to exert himself in the cause of science. I trust he will not consider it improper in me to inform you, that on inquiring at Savannah for William Gaston, Esq., you will readily find him." Audubon.

GEORGIA SCENES.

THE CHARACTER OF A NATIVE GEORGIAN.

[We trespass somewhat on our columns this month to insert the following story, and we hereby caution the reader not to pass it by, on account of its length, for it abounds with humour.]

"There are some yet living, who knew the man whose character I am about to delineate; and these will unanimously bear testimony, that if it be not faithfully drawn, it is not overdrawn. They cannot avouch for the truth of the anecdotes which I am about to relate of him, because of these they know nothing; but they will unhesitatingly declare, that there is nothing herein ascribed to him, of which he was incapable, and of which he would not readily have been the author, supposing the scenes in which I have placed him to be real, and the thoughts and actions attributed to him, to have actually suggested themselves to him. They will further testify, that the thoughts and actions, are in perfect harmony with his general character.

I do not feel at liberty as yet to give the name of the person in question, and therefore, he shall be designated for the present, by the appellation of Ned Brace.

This man seemed to live only to amuse himself with his fellow-beings, and he possessed the rare faculty of deriving some gratification of his favourite propensity, from almost every person with whom he met, no matter what his temper, standing or disposition. Of course he had opportunities enough of exercising his uncommon gift, and he rarely suffered an opportunity to pass unimproved. The beau in the presence of his mistress, the fop, the pedant, the purse-proud, the over-fastidious and sensitive, were Ned's favourite game. These never passed him uninjured; and against such, he directed his severest shafts. With these he commonly amused himself, by exciting in them every variety of emotion, under circumstances peculiarly ridiculous. He was admirably fitted to his vocation. He could assume any character which his humour required him to personate, and he could sustain it to perfection. His knowledge of the character of others, seemed to be intuitive.

It may seem remarkable, but it is true, that though he lived his own peculiar life for about sixteen years, after he reached the age of manhood, he never involved himself in a personal rencounter with any one. This was owing in part to his muscular frame, which few would be willing to engage; but more particularly to his adroitness in the management of his projects of fun. He generally conducted them in such a way, as to render it impossible for any one to call him to account, without violating all the rules of decency, politeness and chivalry at once. But a few anecdotes of him, will give the reader a much better idea of his character, than he can possibly derive from a general description. If these fulfil the description which I have given of my hero, all will agree that he is no imaginary being: if they do not, it will only be, because I am unfortunate in my selection. Having known him from his earliest manhood to his grave—for he was a native Georgian—I confess, that I am greatly perplexed, in determining what portions of his singular history, to lay before the reader, as a proper specimen of the whole. A three day's visit, which I once made with him to Savannah, placed him in a greater variety of scenes, and among a greater diversity of characters, than perhaps any other period of his life, embracing no longer time; and therefore, I will choose this for my purpose.

We reached Savannah, just at night-fall, of a cold December's evening. As we approached the tavern of Mr. Blank, at which we designed to stop, Ned proposed to me that we should drop our acquaintance, until *he* should choose to renew it. To this proposition I most cordially assented, for I knew, that so doing, I should be saved some mortifications, and avoid a thousand questions, which I would not know how to answer. According to this understanding, Ned lingered behind, in order that I might reach the tavern alone.

On alighting at the publick house, I was led into a large dining-room, at the entrance of which, to the right, stood the bar, opening into the dining-room. On the left, and rather nearer to the centre of the room, was a fire-place, surrounded by gentlemen. Upon entering the room, my name was demanded at the bar: it was given, and I took my seat in the circle around the fire. I had been seated just long enough for the company to survey me to their satisfaction, and resume their conversation, when Ned's heavy footstep at the door, turned the eyes of the company to the approaching stranger.

"Your name sir, if you please?" said the restless little bar-keeper, as he entered.

Ned stared at the question with apparent alarm—cast a fearful glance at the company—frowned and shook his head in token of caution to the bar-keeper—looked confused for a moment—then, as if suddenly recollecting himself, jirked a piece of pape out of his pocket—turned from the company—wrote on it with his pencil—handed it to the ba keeper—walked to the left of the fire-place, an took the most conspicuous seat in the circle. H looked at no one, spoke to no one; but fixing hi eyes on the fire, lapsed into a profound reverie.

The conversation, which had been pretty general before, stopped as short, as if every man in th room had been shot dead. Every eye was fixed o Ned, and every variety of expression was to be see on the countenances of the persons present. Th landlord came in—the bar-keeper whispered to hi and looked at Ned. The landlord looked at hi too with astonishment and alarm—the bar-keepe produced a piece of paper, and both of them examined it, as if searching for a fig-mite with th naked eye. They rose from the examination unsatisfied, and looked at Ned again. Those of th company who recovered first from their astonishment, tried to revive the conversation; but the effor was awkward, met with no support, and failed. Th bar-keeper, for the first time in his life, became dignified and solemn, and left the bar to take care o itself. The landlord had a world of foolish questions to ask the gentlemen directly opposite to Ned for which purpose he passed round to them ever two minutes, and the answer to none did he hear.

Three or four boarders coming in, who were un apprized of what had happened, at length revive the conversation; not however, until they had created some confusion, by enquiring of their friends the cause of their sober looks. As soon as the conversation began to become easy and natural, Ne rose, and walked out into the entry. With the firs movement, all were as hush as death; but when h had cleared the door, another Babel scene ensued Some enquired, others suspected, and all wondered Some were engaged in telling the strangers wha had happened, others were making toward the bar and all were becoming clamorous, when Ned returned and took his seat. His re-entry was as fata to conversation, as was the first movement of hi exit; but it soon recovered from the shock—wit the difference, however, that those who *led* before were now mute, and wholly absorbed in the contemplation of Ned's person.

After retaining his seat for about ten minutes, Ne rose again, enquired the way to the stable, and le the house. As soon as he passed the outer door the bar-keeper hastened to the company with Ned' paper in his hand. "Gentlemen," said he, "ca any of you tell me what name this is?" All rushe to the paper in an instant—one or two pair of head met over it with considerable force. After pondering over it to their heart's content, they all agree that the first letter was an "E" and the second "B" or an "R," and the d——l himself could no make out the balance. While they were thus engaged, to the astonishment of every body, Ned interrupted their deliberations with "gentlemen, if yo have satisfied yourselves with that paper, I'll than you for it." It is easy to imagine, but impossible t describe the looks and actions of the company, under their surprise and mortification. They droppe off and left the bar-keeper to his appropriate duty, o handing the paper to Ned. He reached it forth, but Ned moved not a hand to receive it, for about the space of three seconds; during which time he kept his eyes fixed upon the arch-offender in awfully solemn rebuke. He then took it gravely and put it in his pocket, and left the bar-keeper, with a shaking ague upon him. From this moment he became Ned's most obsequious and willing slave.

Supper was announced; Mrs. Blank, the landlady, took the head of the table, and Ned seated himself next to her. Her looks denoted some alarm at finding him so near to her; and plainly showed, that he had been fully described to her by her husband, or some one else.

"Will you take tea or coffee, sir?" said she.

"Why madam," said Ned, in a tone as courteous as Chesterfield himself could have used, "I am really ashamed to acknowledge and to expose my very singular appetite; but habitual indulgence of it, has made it necessary to my comfort, if not to my health, that I should still favour it when I can. If you will pardon me, I will take both at the same time."

This respectful reply, (which, by the way, she alone was permitted to hear,) had its natural effect. It won for him her unqualified indulgence, raised doubts whether he could be the suspicious character which had been described to her, and begat in her a desire to cultivate a further acquaintance with him. She handed to him the two cups, and accompanied them with some remarks drawn from her own observation in the line of her business, calculated to reconcile him to his whimsical appetite; but she could extract from Ned nothing but monosyllables, and sometimes not even that much. Consequently, the good lady began very soon to relapse into her former feelings.

Ned placed a cup on either side of him, and commenced stirring both at the same time very deliberately. This done, he sipped a little tea, and asked Mrs. B. for a drop more milk in it. Then he tasted his coffee, and desired a little more sugar in it. Then he tasted his tea again and requested a small lump more sugar in it—Lastly he tasted his coffee, and desired a few drops more milk in that. It was easy to discover, that before he got suited the landlady had solemnly resolved, never to offer any more encouragements to such an appetite. She waxed exceedingly petulant, and having nothing else to scold, she scolded the servants of course.

Waffles were handed to Ned, and he took one: batter-cakes were handed, and he took one; and so on of muffins, rolls, and corn-bread. Having laid in these provisions, he turned into his plate, upon his waffle and batter-cake, some of the crumbs of the several kinds of bread which he had taken, in different proportions, and commenced mashing all together with his knife. During this operation the landlady frowned and pouted—the servants giggled—and the boarders were variously affected.

Having reduced this mess to the consistency of a hard poultice, he packed it all up to one side of his plate in the form of a terrapin, and smoothed it all over nicely with his knife. Nearly opposite to Ned, but a little below him, sat a waspish little gentleman, who had been watching him with increasing torments, from the first to the last movement of Ned's knife. His tortures were visible to blinder eyes than Ned's, and doubtless had been seen by him in their earliest paroxysms. This gentleman occupied a seat nearest to a dish of steak, and was in the act of muttering something about "brutes" to his next neighbour, when Ned beckoned a servant to him, and requested him "to ask that gentleman for a small bit of steak." The servant obeyed, and planting Ned's plate directly between the gentleman's and the steak-dish, delivered his message The testy gentleman turned his head, and the first thing he saw was Ned's party-coloured terrapin, right under his nose. He started as if he had been struck by a snapping-turtle—reddened to scarlet—looked at Ned, (who appeared as innocent as a lamb)—looked at the servant, (who appeared as innocent as Ned) and then fell to work on the steak, as if he were amputating all Ned's limbs at once.

Ned now commenced his repast. He ate his meat and *breads* in the usual way; but he drank his liquids in all ways. First a sip of tea, then of coffee; then two of the first and one of the last; then three of the last, and one of the first, and so on.

His steak was soon consumed, and his plate was a second time returned to the mettlesome gentleman "for another *very* small bit of steak." The plate paid its second visit, precisely as it had its first; and as soon as the fiery gentleman saw the half-demolished terrapin again under his nose, he seized a fork, drove it into the largest slice of steak in the dish, dashed it into Ned's plate, rose from the table, and left the room; cursing Ned from the very inmost chamber of his soul. Every person at the table, except Ned, laughed outright at the little man's fury; but Ned did not even smile—nay, he looked for all the world, as if he thought the laugh was at him.

The boarders, one after another, retired, until Ned and the landlady were left alone at the table.

"Will you have another cup of tea and coffee sir?" said she, by the way of convincing him that he ought to retire, seeing that he had finished his supper.

"No I thank you madam," returned Ned.

"Will you have a glass of milk and a cup of tea or coffee; or all three together?"

"No ma'am," said Ned. "I am not blind madam," continued he, "to the effects which my unfortunate eccentricities have produced upon yourself and your company; nor have I witnessed them without those feelings which they are well calculated to inspire in a man of ordinary sensibilities. I am aware, too, that I am prolonging and aggravating your uneasiness, by detaining you beyond the hour which demands your presence at the table; but I could not permit you to retire, without again bespeaking your indulgence of the strange, unnatural appetite, which has just caused you so much astonishment and mortification. The story of its beginning might be interesting, and certainly would be instructing to you if you are a mother: but I am indisposed at this time to obtrude it upon your patience, and I presume you are still less disposed to hear it. My principal object, however, in claiming your attention for a moment at this time, is to assure you, that out of respect to your feelings, I will surrender the enjoyment of my meals for the few days that I have to remain in Savannah, and conform to the customs of your table. The sudden change of my habits will expose me to some inconvenience, and may perhaps affect my health; but I willingly incur these hazards, rather than to renew your mortification, or to impose upon your family the trouble of giving me my meals at my room."

The good lady, whose bitter feelings had given place to the kinder emotions of pity and benevolence, before Ned had half concluded his apology, (for it was delivered in a tone of the most melting eloquence,) caught at this last hint, and insisted upon sending his meals to his room. Ned reluctantly consented, after extorting a pledge from her, that *she* would assume the responsibilities of the trouble that he was about to give the family.

"As to your *boarders*, madam," said Ned, in conclusion, "I have no apology to make to them. I grant them the privilege of eating what they please, and as they please; and so far as they are concerned I shall exercise the same privileges, reckless of their feelings or opinions; and I shall take it as a singular favour if you will say nothing to them or to any one else, which may lead them to the discovery, that I am acquainted with my own peculiarities."

The good lady promised obedience to his wishes, and Ned, requesting to be conducted to the room, retired.

A group of gentlemen at the fire-place had sent many significant "hems" and smiles to Mrs. Blank, during her *tete-a-tete* with Ned; and as she approached them, on her way out of the room, they began to taunt her playfully, upon the impression which she seemed to have made upon the remarkable stranger.

"Really," said one, "I thought the *impression* was on the other side."

"And in truth, so it was," said Mrs. B. At this moment her husband stepped in.

"I'll tell you what it is, Mr. Blank," said one of the company, "you'd better keep a sharp look-out on that stranger; our landlady is wonderfully taken with him."

"I'll be bound," said Mr. B. "for my wife; the less like any body else in the world he is, the better will she like him."

"Well I assure you," said Mrs. B "I never had my feelings so deeply interested in a stranger in my life. I'd give the world to know his history."

"Why, then," rejoined the landlord; "I suppose he has been quizzing us all this time."

"No," said she, "he is incapable of quizzing. All that you have seen of him is unaffected, and perfectly natural to him."

"Then, really," continued the husband, "he is a very interesting object, and I congratulate you upon getting so early into his confidence; but as I am not quite as much captivated with his unaffected graces as you seem to be, I shall take the liberty, in charity to the rest of my boarders, of requesting him to-morrow, to seek other lodgings."

"Oh," exclaimed Mrs. B. in the goodness of her heart, and with a countenance evincive of the deepest feeling, "I would not have you do such a thing for the world. He's only going to stay a few days."

"How do you know?"

"He told me so, and do let's bear with him that short time. He sha'nt trouble you or the boarders any more."

"Why Sarah," said the landlord, "I do believ you are out of your senses!"

"Gone case!" said one boarder. "Terribl affair!" said another. "Bewitching *little* fellow, said a third. "Come, Mrs. Blank, tell us all h said to you? We young men wish to know how t please the ladies, so that we may get wives easil I'm determined the next party I go to, to make soup of every thing on the waiters, and eat all a once. I shall then become irresistible to th ladies."

"Get along with your nonsense," said Mrs. B smiling as she left the room.

At eight o'clock, I retired to my room, which happened (probably from the circumstance of our reaching the hotel within a few minutes of each other, to be adjoining Ned's. I had no sooner entered m room, than Ned followed me, where we interchange the particulars which make up the foregoing story He now expended freely the laughter which he ha been collecting during the evening. He stated tha his last interview with Mrs. Blank, was the resul of necessity—That he found he had committed himself in making up and disposing of his odd supper for that he should have to eat in the same way during his whole stay in Savannah, unless he coul manage to get his meals in private; and though h was willing to do penance for one meal, in order t purchase the amusement which he had enjoyed, h had no idea of tormenting himself three or fou days for the same purpose. To tell you the hones truth, said he, nothing but an appetite whetted b fasting and travelling, could have borne me throug the table scene. As it was, my stomach severa times threatened to expose my tricks to the whol company, by downright open rebellion. I feel tha I must make it some atonement for the liberty have taken with it; and therefore, propose that w go out and get an oyster supper before we retire t rest. I assented: we set out, going separately, until we reached the street.

We were received by the oyster-vender, in small shop, which fronted upon the street, and wer conducted through it to a back door, and thence, b a flight of steps, to a convenient room, on a secon floor of an adjoining building. We had been seate about three minutes, when we heard footsteps o the stairs, and distinctly caught this sentence fro the ascending stranger: "Aha, Monsieur Middletong! you say you hab de bes oystar in de cittee Well, me shall soon see."

The sentence was hardly uttered, before the doo opened, and in stept a gay, smerky little Frenchman. He made us a low bow, and as soon as h rose from his obeisance, Ned rushed to him in transports of joy—seized him by the hand, and shakin it with friendship's warmest grasp, exclaimed, "Ho do you do my old friend—I had no idea of meetin you here—how do you do Mr. Squeezelfanter? ho have you been this long time?

"Sair," said the Frenchman, "me tank you ve much to lub me so hard; but you mistake de ge tleman—my name is not de Squeezelfaunter."

"Come, come John," continued Ned, "quit yo old tricks before strangers. Mr. Hall, let me intr duce you to my particular friend, John Squeezelfa ter, from Paris."

"Perhaps, sir," said I—not knowing well wh to say, or how to act in such an emergency—"perhaps you have mistaken the gentleman."

"Begar, sair," said Monsieur, "he is mistake obery ting at once. My name is not *Zhaun*, me play no *treek*, me is not the gentilmong fren', me did not come from *Paree*, but from Bordeaux—and me did not suppose dare was one man in all France, dat was name de Squeezelfaunter."

"If I am mistaken," said Ned, "I humbly ask your pardon; but really, you look so much like my old friend *Jack*, and talk so much like him, that I would have sworn you were he."

"Vell sair," said Monsieur, looking at Ned as though he might be an acquaintance after all—"vell sair, dis time you tell my name right—my name is Jacques—*Jacques Sancric.*

"There," proceeded Ned, "I knew it was impossible I could be mistaken—your whole family settled on *Sandy Creek*—I knew your father and mother, your sister Patsy and Dilsy, your brother Ichabod, your aunt Bridget, your ——"

"Oh mon Dieu, mon Dieu!" exclaimed the Frenchman, no longer able to contain his surprise; "dat is von 'Mericane familee. Dare vas not one French familee hab all dat name since dis vorl' vas make."

"Now look at me good Jack," said Ned, "and see if you don't recollect your old friend Obadiah Snoddleburg, who used to play with you when a boy, in Sandy Creek."

"Vell, Monsieur Snotborg, me look at you ver' well; and begar me neber see you in de creek, nor out de creek—'Tis ver' surprise, you not know one *name*, from one *creek*."

"Oh, very well sir, very well, I forgot where I was—I understand you now perfectly. You are not the first gentleman I have met with in Savannah, who knew me well in the country, and forgot me in town. I ask your pardon sir, and hope you'll excuse me."

"Me is ver' will to know you *now*, sair; but begar me will not tell you one lie, to know you *twenty-five and tirty years ago*."

"It makes no difference sir," said Ned, looking thoughtfully and chagrined. "I beg leave, however, before we close our acquaintance; to correct one mistake which I made—I said you were from Paris—I believe on reflection, I was wrong—I think your sister Dilsy told me you *were* from Bordeaux."

"Foutre, de sist, Dils!—Here Monsieur Middletong! My oystar ready!"

"Yes sir."

"Vel, if my oystar ready, you give dem to my fren' Monsieur Snotborg; and ask him to be so good to carry dem to my sist' Dils, and my brodder Ichabod on Sand' Creek." So saying, he vanished like lightning.

The next morning at breakfast, I occupied Ned's seat. Mrs. Blank had no sooner taken her place, than she ordered a servant to bring her a waiter; upon which she placed a cup of tea, and another of coffee—then ordering three plates, she placed them on it; sent one servant for one kind of bread, and another for another, and so on through all the varieties that were on the table, from which she made selections for plate No. 1. In the same way did she collect meats for plate No. 2—No. 3 she left blank. She had nearly completed her operations, when her husband came to know why every servant was engaged, and no gentleman helped to any thing, when the oddly-furnished waiter met his eye, and fully explained the wonder.

"In God's name, Sarah," said he, "who are you mixing up those messes for?"

"For that strange gentleman we were speaking of last night," was the reply.

"Why doesn't he come to the table?"

"He was very anxious to come, but I would not let him."

"*You* would not let him! Why not?"

"Because I did not wish to see a man of his delicate sensibilities ridiculed and insulted at my table."

"Delicate devilabilities! Then why did'nt you send a *servant* to collect his mixtures?"

"Because I preferred doing it myself, to troubling the boarders. I knew that wherever his plates went, the gentlemen would be making merry over them, and I could'nt bear to see it."

The landlord looked at her for a moment, with commingled astonishment, doubt, and alarm; and then upon the breath of a deep drawn sigh proceeded—

"Well, d——n the man! He has'nt been in the house two hours, except when he was asleep, and he has insulted one half my boarders, made fools of the other half, turned the head of my barkeeper, crazed all my servants, and run my wife stark, staring, raving mad—A man who is a perfect clown in his manners, and who, I have no doubt, will, in the end, prove to be a horse-thief."

Much occurred between the landlord and his lady in relation to Ned, which we must of necessity omit. Suffice it to say, that her assiduities to Ned, her unexplained sympathies for him, her often repeated desires to become better acquainted with him, conspiring with one or two short interviews which her husband saw between her and Ned, (and which consisted of nothing more than expressions of regret on his part, at the trouble he was giving the family, and assurances on hers, that it was no trouble at all,) began to bring upon the landlord, the husband's worst calamity. This she soon observed, and considering her duty to her husband as of paramount obligation, she gave him an explanation that was entirely satisfactory. She told him that Ned was a man of refined feelings and high cultivated mind, but that in his infancy his mother had forced him to eat different kinds of diet together, until she had produced in him a vitiated and unconquerable appetite, which he was now constrained to indulge, as the drunkard does his, or be miserable. As the good man was prepared to believe any story of *woman's* folly, he was satisfied.

This being the sabbath, at the usual hour, Ned went to church, and selected for his morning's service, one of those churches in which the pews are free, and in which the hymn is given out, and sung by the congregation, a half recitative.

Ned entered the church, in as fast a walk as he could possibly assume—proceeded about half down the aisle, and popt himself down in his seat as quick as if he had been shot. The more thoughtless of the congregation began to titter, and the graver peeped up slyly, but solemnly at him.

The pastor rose, and before giving out the hymn, observed, that *singing* was a part of the service, in which he thought the whole congregation ought to join. Thus saying, he gave out the first lines of the hymn. As soon as the tune was raised, Ned struck in, with one of the loudest, hoarsest, most discordant voices, that ever annoyed a solemn assembly.

"I would observe," said the preacher, before giving out the next two lines, "that there are some persons who have not the gift of singing; such of course are not expected to sing." Ned took the hint, and sang no more; but his entrance into church, and his entrance into the hymn, had already dispersed the solemnity of three-fifths of the congregation.

As soon as the pastor commenced his sermon, Ned opened his eyes, threw back his head, dropped his under jaw, and surrendered himself to the most intense interest. The preacher was an indifferent one, and by as much as he became dull and insipid, by so much did Ned become absorbed in the discourse. And yet it was impossible for the nicest observer to detect any thing in his looks or manner, short of the most solemn devotion. The effect which his conduct had upon the congregation, and their subsequent remarks must be left to the imagination of the reader. I give but one remark—"Bless that good man who came in the church so quick," said a venerable matron as she left the church door, "how he was affected by the *sarment*."

Ned went to church no more on that day. About four o'clock in the afternoon, while he was standing at the tavern door, a funeral procession passed by, at the foot of which, and singly, walked one of the smallest men I ever saw. As soon as he came opposite the door, Ned stepped out and joined him with great solemnity. The contrast between the two was ludicrously striking, and the little man's looks and uneasiness, plainly showed that he felt it. However, he soon became reconciled to it. They proceeded but a little way before Ned enquired of his companion, who was dead?

"Mr. Noah Bills," said the little man.

"Nan?" said Ned, raising his hand to his ear in token of deafness, and bending his head to the speaker.

"Mr. Noah Bills," repeated the little man loud enough to disturb the two couple immediately before him.

"Mrs. Noel's Bill!" said Ned, with mortification and astonishment. "Do the white persons pay such respect to niggars in Savannah? *I* sha'nt do it"—So saying he left the procession.

The little man was at first considerably nettled; but upon being left to his own reflections, he got into an uncontrollable fit of laughter, as did the couple immediately in advance of him, who overheard Ned's remark. The procession now exhibited a most mortifying spectacle—The head of it in mourning and in tears, and the foot of it convulsed with laughter.

On Monday, Ned employed himself in disposing of the business which brought him to Savannah, and I saw but little of him; but I could not step into the street without hearing of him. All talked about him, and hardly any two agreed about his character.

On Tuesday he visited the market, and set it all in astonishment or laughter. He wanted to buy
something of every body, and some of e
but could not agree upon the terms of a
cause he always wanted his articles in su
and numbers, as no one would sell, or
tions to which no one would submit.
single example—He beset an old negro
sell him the half of a living chicken.

"Do my good mauma, sell it to me," sa
wife is very sick, and is longing for c
and this is all the money I have," (holdin
and a half cents in silver,) "and its just
chicken comes to at your own price."

"Ki, massa! How gwine cut live
two?"

"I don't want you to cut it in two ali
clean it, and then divide it."

"Name o' God! What sort o' cha
clean chicken in de market-house!—Wh
for scall um, and wash um?"

"Don't scald it all; just pick it so."

"Ech-ech! Fedder fly all ober de bu
meat, he come bang me fo' true—No mass
sorry for your wife, but I no cutty chicke

In the afternoon, Ned entered the dinin
the tavern, and who should he find ther
sieur Sancric, of oyster-house memory
the tavern-keeper were alone. With the f
of Ned, "Le Diable," exclaimed the F
"here my broder Ichbod 'gain!"—and
went.

"Mr. Sancric!" said the landlord, call
as if to tell him something just thought o
lowing him out, "What did you say
name is?"

"He name Monsieur Snotborg."

"Why that can't be his name, for it be
E or an R. Where is he from?"

"From Sand Creek."

"Where did you know him?"

"Begar, me neber did know him."
sauntered in sight of the Frenchman, a
ished.

"Well," said the landlord, as he re
does seem to me, that every body who ha
to do with that man, runs crazy forthwith

When he entered the dining-room he
deeply engaged reading a child's primer,
he seemed wonderfully delighted. T
sat for a moment, smiled, and then hast
room. As soon as he disappeared, Ned
his book, and took his station behind som
the bar, which at the moment was des
had just reached his place, when the l
turned with his lady.

"Oh," said the first, "he's gone! I b
in to show you what kind of books your r
fined feelings and highly cultivated min
in—But he has left his book, and here it
at the place where he left off—and d
what's in it?"

They examined, and found that he had
ing the interesting poem of "Little Jack

"Now," continued the landlord, "if yo
me, he was just as much delighted with
as you or I would be with the best writ
of the Spectator."

"Well, it's very strange," said Mrs.
reckon he must be *flighty*, for no man

made a more gentlemanly apology than he did to me, for his peculiarities; and no one could have urged it more feelingly."

One thing is very certain," said the husband, "if he be not flighty himself, he has a wonderful knack of making every body else so. Sancric ran away from him just now, as if he had seen the devil—called him by one name when he left the room, by another at the door, told me where he came from, and finally swore he did not know him at all."

Ned having slipped softly from the bar into the entry, during this interview, entered the dining-room, as if from the street.

"I am happy," said he, smiling, to meet you together and alone, upon the eve of my departure from Savannah, that I may explain to you my singular conduct, and ask your forgiveness of it. I will do so if you will not expose my true character until I shall have left the city."

This they promised—"My name then," continued he, "is Edward Brace, of Richmond county. Humour has been my besetting sin from my youth up. It has sunk me far below the station to which my native gifts entitled me. It has robbed me of the respect of all my acquaintances; and what is much most to be regretted, the esteem of some of my best and most indulgent friends. All this I have long known, and I have a thousand times deplored, and as often resolved to conquer, my self-destroying propensity. But so deeply is it wrought into my very nature—so completely and indissolubly interwoven is it, with every fibre and filament of my being, that I have found it impossible for me to subdue it. Being on my first visit to Savannah, unknowing and unknown, I could not forego the opportunity which it furnished, of gratifying my ungovernable proclivity. All the extravagancies which you have seen, have been in subservience to it."

He then explained the cause of his troubling the kind lady before him, to give him his meals at his room, and the strange conduct of Monsieur Sancric; at which they both laughed heartily. He referred them to me for confirmation of what he had told them. Having gone thus far, continued he, "I must sustain my character until to-morrow, when I shall leave Savannah."

Having now two more to enjoy his humour with him and myself, he let himself loose that night among the boarders, with all his strength, and never did I see two mortals laugh, as did Mr. and Mrs. Blank.

Far as I have extended this sketch, I cannot close, without exhibiting Ned in one new scene, in which accident placed him before he left Savannah.

About two o'clock on the morning of our departure, the town was alarmed by the cry of fire. Ned got up before me, and taking one of my boots from the door, and putting one of his in its place, he marched down to the front door with odd boots. On coming out and finding what had been done, I knew that Ned could not have left the house, for it was impossible for him to wear my boot. I was about descending the stairs, when he called to me from the front door, and said the servant had mixed our boots, and that he had brought down one of mine. When I reached the front door, I found Ned and Mr. and Mrs. Blank there; all the inmates of the house having left it, who designed to leave it, but Ned and myself.

"Don't go and leave me Hall," said he, holding my boot in his hand, and having his own on his leg.

"How can I leave you," said I, "unless you'll give me my boot?" This he did not seem to hear.

"Do run gentlemen," said Mrs. Blank greatly alarmed—"Mr. Brace, you've got Mr. Hall's boot, give it to him."

"In a minute madam," said he, seeming to be beside himself. A second after, however, all was explained to me. He designed to have my company to the fire, and his own fun before he went.

A man came posting along in great alarm, and crying "fire," loudly. "Mister, Mister," said Ned, jumping out of the house.

"Sir," said the man, stopping and puffing awfully.

"Have you seen Mr. Peleg Q. C. Stone, along where you've been?" enquired Ned, with anxious solicitude.

"D——n Mr. Peleg Q. C. Stone," said the stranger—"What chance have I of seeing any body, hopping up at two o'clock in the morning, and the town a fire!" and on he went.

Thus did he amuse himself with various questions and remarks, to four or five passengers, until even Mrs. Blank forgot for awhile, that the town was in flames. The last object of his sport, was a woman who came along, exclaiming, "oh, it's Mr. Dalby's house—I'm sure it's Mr. Dalby's house!" Two gentlemen assured her, that the fire was far beyond Mr. Dalby's house; but still she went on with her exclamations. When she had passed the door about ten steps, Ned permitted me to cover my frozen foot with my boot, and we moved on toward the fire. We soon overtook the woman just mentioned, who had become somewhat pacified. As Ned came alongside of her, without seeming to notice her, he observed "poor Dalby, I see his house is gone."

"I said so," she screamed out—"I knew it!"—and on she went, screaming ten times louder than before.

As soon as we reached the fire, a gentleman in military dress rode up and ordered Ned into the line, to hand buckets. Ned stepped in, and the first bucket that was handed to him, he raised it very deliberately to his mouth, and began to drink. In a few seconds, all on Ned's right, were overburdened with buckets, and calling loudly for relief, while those on his left were unemployed. Terrible was the cursing and clamour, and twenty voices at once ordered Ned out of the line. Ned stepped out, and along came the man on horseback, and ordered him in again.

"Captain," said Ned, "I am so thirsty that I can do nothing until I can get some water, and they will not let me drink in the line."

"Well," said the captain, "step in, and I'll see that you get a a drink."

Ned stepped in again, and receiving the first bucket, began to raise it to his lips very slowly, when some one halloed to him to pass on the bucket, and he brought it down again, and handed it on.

"Why did'nt you drink?" said the captain.

"Why don't you see they won't let me?" said Ned.

"Don't mind what they say—drink, and then go on with your work."

Ned took the next bucket, and commenced raising it as before, when some one again ordered him to pass on the bucket.

"There," said Ned, turning to the captain, with the bucket half raised, "you hear that?"

"Why, blast your eyes," said the captain, "what do you stop for? Drink on and have done with it."

Ned raised the bucket to his lips and drank, or pretended to drink, until a horse might have been satisfied.

"Ain't you done?" said the captain, general mutiny and complaint beginning to prevail in the line.

"Why ha'nt you drank enough?" said the captain, becoming extremely impatient.

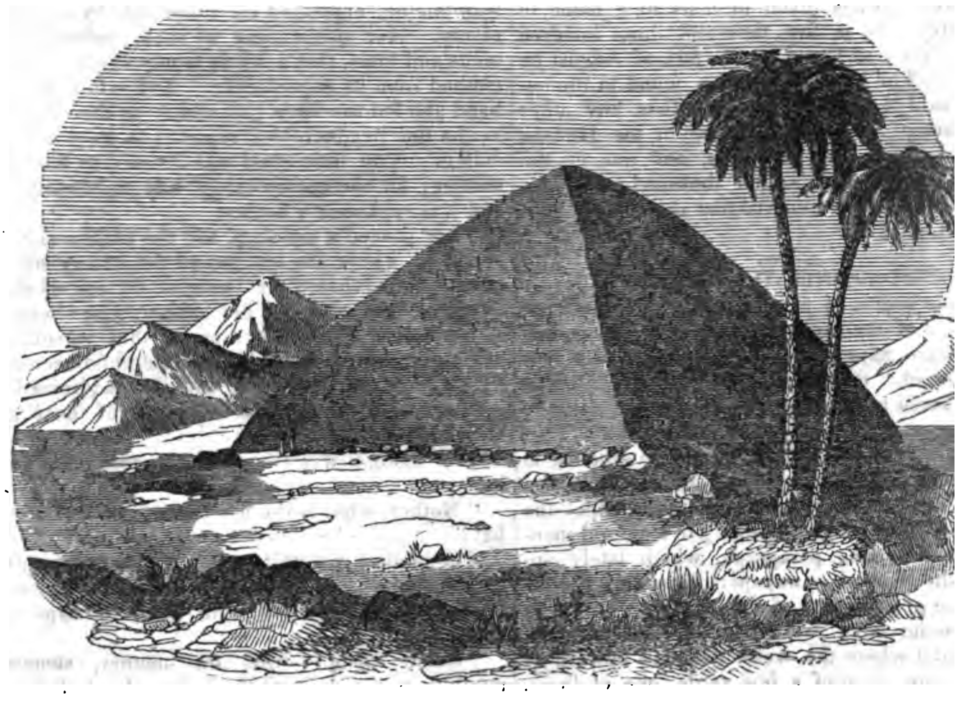
'Most," said Ned, letting out a long breath, and still holding the bucket near his lips.

"Zounds and blood!" cried the captain, "clear yourself—you'll drink an engine full of water."

Ned left the ranks, and went to his lodgings; and the rising sun found us on our way homeward."

PYRAMID OF FAIOUM.

THE structure represented in our wood-cut, which is copied from the great French work on Egypt, represents a pyramid of sun-dried brick in Faioum, the ancient Arsinoe. The large bricks of which it is formed are made of black, loamy, friable earth, or Nile-mud, compacted with chopped straw, in the
same way that such bricks are still made
and elsewhere in the East. There are o
pyramids at Dashour and Saccara, differin
cept in size and degree of preservation.
amid at Faioum stands on an elevated, s
teau; and its base is a square of a hundred
ty-two yards, its present height being a hu
ninety-seven feet. This and the other b
mids have not obtained the degree of notic
serve, the attention of travellers having be
clusively engrossed by the pyramids o
The French, however, discovered a subt
passage to this pyramid, and found withi
phagus and also a salt spring. It will be
in common with most of the other structu
same material, it has lost much of its
form, and approaches to that of a mound;
reader turns to the cut of the Birs Nen
p. 101,) and compares the two, with the re
that the material of both is sun-dried brick
be led to conclude that there was much res
if not identity, in form and intention bet
now ruined mounds of Babylonia and the
pyramids of Egypt. It is a remarkable co
of this view that Herodotus, who describes t
of Babylon as a pyramid with graduated s
minishing with the ascent, mentions the py
Egypt as being similarly constructed, with
platforms diminishing in size as they rose
and is understood to state that they *were a*
completed to a smooth surface by being co
blocks of stone, which filled up the inters
tween the different stories so as to oblit
graduated by a sloping appearance. Obs
on the pyramids have confirmed this accou
construction.



[Brick Pyramid of Faioum.]

MISCELLANY.

HIGHEST BUILDINGS IN EUROPE.

Cross of St. Peters, (Rome	540 feet.
Antwerp Cathedral,	470
Strasburg Minster,	465
Vienna Cathedral,	450
Steeple of St. Martin's, (Landshut)	445
Steeple of St. Michael's, (Hamburg)	420
Salisbury Cathedral,	410
Spire of Mentz Cathedral,	400
Steeple of St. Peter's,	395
Cathedral of Chatres,	385
Freyburg Cathedral,	380
Cross of St. Paul's, (London)	360
Giralda, or Tower of Seville,	350
Cathedral at Ulm,	356
Cathedral at Milan,	355
Pantheon, (Paris)	355
St. Peter's and St. Paul's, (Petersburg	350
Tower Degli Ameilli (Bologna)	350
Dome of the Invalides, (Paris)	342
Madgeburg Cathedral,	330
Norwich Cathedral,	315
Lincoln Cathedral,	300
Cathedral of the Annunciation, (Moscow)	275
Cathedral of Bale,	266
York Minster,	230
Campanile Torta, or Leaning Tower of Pisa	210
Monument, (London)	202
Column of the Place Vendome, (Paris)	140
Trajan's Pillar, (Rome)	140
Antonine Column,	140

MOUNT MARCY.

The highest mountain in the state of New York is in Essex county. Its height has been measured by Professor Hall, one of the geological surveyors for the state, who has given to it its new name of Mount Marcy. It is five thousand three hundred feet high. Ice was found on the fifth of August on its summit. The beds of iron ore found in the vicinity are said to be more extensive than any other in the country. The east branch of the Hudson river rises between this mountain, and one on the west. At its source it is four thousand feet above the Atlantick, and two hundred feet above the round-top of the Catskills.

SUSPENDED ANIMATION RESTORED.

When the bodies of persons apparently drowned are taken out of the water, those who are near, and wish to restore animation, are frequently at a loss how to proceed. Some ignorant people think that the body should be held up by the feet, in order to allow the water to run out of the mouth. This should never be done. The best way to proceed is to lay the body down, rub it with warm cloths, and breathe in the nostrils or mouth, so as to expel the water, and set the lungs a working in a natural manner. The following paragraph, which lately appeared in the Scottish newspapers, furnishes a striking instance of the value of this plan.

While some boys were bathing in Linlithgow loch, at a part where the water deepens upward of fifty feet in the space of a few yards, one of them, in attempting to swim, got into deep water inadvertently, and went down. His companions immediately ran off to give the alarm, but a considerable time elapsed before the body was got out, when it appeared that the vital spark had fled, the body having been half an hour in the water. The following treatment was resorted to, to restore animation, which proved successful:—Without losing one moment, the body was placed on its back, by some gentlemen, on a sloping bank, the head being nearly eighteen inches higher than the feet, in this position, one of the gentlemen instantly put one hand on the boy's mouth, having the other on the abdomen, and applying his mouth to the nose, commenced blowing with all his might, allowing the water to escape between every blast, which came in great quantities from both mouth and nose, being forced out by the injected air, and a slight pressure on the abdomen with the other hand. This operation being repeated for ten or fifteen minutes, with continual rubbing of the legs, arms, abdomen and chest, a draught of air appeared to be inhaled, and, in a little while, respiration slowly and feebly commenced. Warm water and flannels were now got, and applied to the feet and body, which appeared to cause excruciating pain, the muscles of the face becoming much distorted, followed by the vomiting of water in considerable quantities, writhing and crying hysterically. Fully an hour and a half elapsed before the boy became sensible, and recovered the use of his eyes, which were fixed during the process of resuscitation.

EXAMPLE AND PRECEPT.—J. K. PAULDING.

A fine fashionable mother, one beautiful spring morning, walked forth into the city, leading by the hand a little child five or six years old. The mother was dressed in all the fantastick finery of the times. She had a pink bonnet, ornamented with a bird of paradise, shaded with huge bows of wide ribbon—sleeves which caused her taper waist to appear like lean famine, supported on either side by overgrown plenty. Her gown was of such redundancy of plaits and folds, that a whole family might have been clothed from its superfluities. And while with one hand she led the little girl along, in the other she held a fine handkerchief, reported to have cost fifty dollars. The little child was dressed as fine as its mother; for she unfortunately had light curly hair, and was reckoned a beauty.

They passed a toy-shop, and the child insisted on going in, where she laid out all the money she had in various purchases that were of no use whatever, in spite of the advice of her mother, who alternately scolded and laughed at her for thus wasting her money on things so useless. The child seemed to reflect for a few moments, and thus addressed her mother:—"Mother, what is the use of those great sleeves you wear?"

The mother was silent, for the question puzzled her.

"Mother, what is the use of that fine bird on your hat?"

The mother was still more at a loss for a reply.

"Mother, what is the use of having a worked handkerchief, bordered with lace, to wipe your nose?"

"Come along"—cried the mother, somewhat roughly, as she dragged the little girl out of the toy-shop—"come along, I say, and don't ask so many foolish questions."

USEFUL KNOWLEDGE.

LIME AND SAND CEMENT.

The best methods of preparing calcareous cements, have been investigated by Dr. Higgins, with great ability. He has advanced the most satisfactory proofs, founded upon analysis, that the Romans, whose mortar or cement, after a lapse of two thousand years, instead of being decayed, has become as hard as the stones it binds together, possessed no uncommon secret, which we are unable to discover. Sharp sand, free from clay, salts, calcareous, gypseous, or other grains less hard and durable than quartz, is better than any other. When a coarse and fine sand, corresponding in the size of their grains to the coarse and fine sand hereafter described, cannot be easily obtained in its native state, the following method of sorting and cleansing it must be resorted to.

Let the sand be sifted in streaming clear water, through a sieve which will allow all grains, not exceeding one sixteenth of an inch, to pass through, and let the stream of water be so regulated as to wash away the very fine parts of the sand, the clay, and every other matter lighter than sand. The coarse rubbish left on the sieve must be rejected. The sand which subsides in the receptacle must then be further cleansed and sorted into two parcels, by the use of a sieve, which allows no grains to pass but what are less than one thirteenth of an inch in diameter. That part which passes through the sieve we shall call fine sand; the remaining portion, coarse sand. These separate portions should be dried in the sun, or by a fire.

That sort of lime must be chosen, which heats the most in slacking, and slacks the quickest when duly watered; which is the freshest made, and has been the closest kept.

Put fourteen pounds of the lime chosen according to these important rules into a brass wire sieve, still finer than the last mentioned. Slack the lime, by alternately plunging it into, and raising it out of a butt of soft water; reject all the matter which does not pass easily through the sieve, and use fresh portions of lime in a similar manner, until as many ounces of lime have passed through the sieve as there are quarts of water in a butt. This is the lime water that contributes so materially to the excellence of the stucco. As soon as a sufficient portion of lime has been imparted to it, it should be closely covered, until it becomes clear, and then drawn off by plug holes placed at different heights, as the lime subsides, without breaking the crust formed on the surface. The more free the water is from saline matter, the better will the liquor be. Lime water must be kept in airtight vessels till the moment it is used.

Slack fifty-eight pounds of lime, chosen as above directed, by gradually sprinkling on it the lime water. Sift the slacked part of the lime immediatlely through the last mentioned fine brass wire sieve; the lime which passes must be used instantly, or kept in airtight vessels, and the rest rejected. This finer, richer part of the lime, may be called purified lime.

The materials of the cement being thus prepared, take fifty-six pounds of the coarse sand, and forty-two pounds of the fine sand; mix and plac a clean mortar board, to the height of s with a flat surface, wet with the lime wate low all that the sand in this condition can to flow off the board.

To the wetted sand, add fourteen poun purified lime, in several successive portio and beating them well together. Then a pounds of bone ashes in successive portion all together, and the sooner the cement th is used, the better it will be. As this shorter than mortar or common stucco, sooner, it ought to be worked expeditiou cases. The meterials used along with it ing, or the ground on which it is laid in should be well wetted with lime water at t of laying it on; and when the cement requi ening, lime water should always be used.

The proportions above given, are inten cement suited to exposed situations, where cessary to guard against the effects of hot or rain. In general, half the quantity of b will be sufficient; and although the ceme latter case will not harden deeply so soo be ultimately stronger, provided the weath vorable.

This cement should never be applied to fore they have become perfectly dry, other damps or gases, that should escape by ex the atmosphere, are held in the wall, or on face behind the cement, which being con frost into ice, separates the cement from but if prepared and applied as above direct be used for all outside purposes on brick work, or upon lathwood, having first a stro up coat of lime and hair, without any dan cracking, or of being injured by frost. work is required to be frescoed, or colour itate stone, it should be done in the follow ner. Take of the lime water before descr add five ounces of copperas to every gallon much of the powdered lime as will mak whitewash: this may be teinted of any colour, by adding ochre, umber, blue black, or other colour, to give the desired teint, an to the cement, as soon as it is laid on.

Builder's Pri

Peach Trees.—Mr. William Phillips, sylvania, has derived great benefit from the tion of air-slaked, old effeted lime, to pea the effects of which, according to his own have been very great. He puts about a lime to each tree: he thinks it useful as a tive against the insects so fatal to these tre have then two applications recommended, u ashes and lime, and from our own experi able to recommend both. We are not su has the preference. The lime and ashe both be dug every spring. A friend sugg he killed his young peach trees by lime; needed in the application.

Defaced Coins.—To read an inscription ver coin, which, by much wear, has becom obliterated, put the poker in the fire, when place the coin upon it, and the inscription ly appear of a greenish hue.

LITERARY NOTICES.

Researches in Theoretical Geology. By H. T. De La Beche, F. R. S., V. P., G. S., &c., &c. With a Preface and Notes by Prof. Edward Hitchcock, of Amherst College; 336 pages, 12 mo. New York: F. J. Huntington, & Co.

We cannot give our readers a better idea of the volume before us, probably, than by making some extracts from the preface of Prof. Hitchcock, who has been the means of bringing out this work in its American dress. Of the author, of his own notes, and of the importance of Geology, Prof. Hitchcock thus speaks:

"Those who are at all familiar with the present state of geological science in Europe, will recognize in the author of this treatise, one of the most distinguished names in that bright list of observers in Great Britain, who are bringing to light such wonders in the rocky strata of our globe, as forcibly to arrest the attention of every intelligent man. They will recollect him as the author of the 'Geological Manual,' one of the best elementary works on that subject which has appeared: also of a work entitled 'Sections and Views illustrative of Geological Phenomena,' and of another with the title—'How to observe;' besides numerous papers in the Journals and Transactions of learned societies. The present work, however, I apprehend, is scarcely known in this country; as I have in vain searched our bookstores to find it. But having obtained the loan of Prof. Silliman's copy, he has kindly consented to have it used for re-publication. And he allows me to say, that he approves and recommends the work. It will be made a text book for the Geological Class in Amherst College. And I cannot but believe that it will prove an acceptable present to the rapidly increasing number of intelligent individuals in our country, who are giving attention to geology. For it seems to me, as a whole, to contain the most satisfactory theoretick views of geological phenomena to be found in any work extant. One cannot read a chapter without perceiving that the author is a thorough master of his subject, and has thought much and accurately upon its theory. Even where we do not agree with him, his arguments are stated so candidly and fairly, that it is no easy matter to find fault with them.

"The notes which I have added, are in very few cases intended to controvert the opinions of the author. But for the most part, they contain facts respecting American Geology, that may modify the conclusions drawn from European rocks; or they consist of now facts which I have recently observed, and which I have thought might prove of interest or value to geologists. At the close I have added the opinions of several distinguished men, respecting the connection of Geology with revealed religion;—a subject which the author has not thought proper to touch.

"Within the last twenty years, a prodigous impulse has been given to the study of geology throughout the civilized world. In Europe it has attracted the attention of the intelligent of all classes; and in our own country it is beginning not only to be popular, but even fashionable. Rozet, a very recent writer on Geology extends this statement much farther. 'In almost all countries of the earth,' says he, 'observers are occupied in collecting facts; the principal towns on the globe form collections and open schools of geology; Geological Societies, on broad foundations, are formed every where, and open a communication with one another; and a great number of educated men, before strangers to the science, have enrolled themselves under its banners. So deeply important are geological studies now seen to be, that they have become really popular. In France we find courses on geology in schools, from those of agriculture, to those embracing the profound sciences.'

"The same writer gives us a summary of the economical uses of geology—

"'The applications of geology,' says he, 'are numerous: It guides the miner in his search after, and in the working of minerals: It shows the architect in what mountains he may find building stones, marble, slate, limestone, sand and purzolana. It shows the agriculturist what soils are proper for this or that culture; the rocks proper for marl, and the points where he may search, with some chance of success, for springs to irrigate his fields. It directs the polter and the brick maker how to find readily the argillaceous beds which they may employ, and the manufacturer of porcelain to those beds of beautiful kaolin, which are now wrought in so great perfection.'

"The intellectual and religious utilities of this science are set forth by M Rozet with considerable force.

"'The study of the earth's interiour,' says he, 'may conduct us; if not to a solution of the great problem of creation, at least to a knowledge of some of the laws by which it was governed at different epochs. It has cast much light on this point. It shows us that organick beings became more and more perfect from the commencement of life on the earth, to the time of man's appearance. It shows us, that during the long interval separating man from the first animal, the universe was agitated by successive revolutions; but that since that time the equilibrium has become perfectly established, so as to permit man to spread tranquilly over the globe. At this day every thing tends to perfect stability, which appears to promise to the existing order of things an eternal duration.'

"In this last sentence [says Prof. Hicthcock,] the writer I suppose, refers only to what geology teaches, without revelation. But apart from revelation, this opinion would not be considered correct by a majority of the oldest geologists. I content myself with quoting only the views of M. Elie de Beaumont, a distinguished geologist and fellow-countryman of M. Rozet. This writer, in his work on the elevation of mountain chains, after having traced no less than twelve systems of elevation in Europe which happened at different epochs, and any one of which might have been sufficient to sweep the greater part of the earth of its inhabitants, proceeds to inquire, whether we are to look for any similar events in time to come: and he concludes by saying, 'Whatever succession of terms result from this memoir, it is difficult to predict any modification which so changes the aspect of the subject, as to lead us to suppose that the mineral crust of the globe has lost the property of successively ridging itself, in different directions, so that we can be sure that the period of tranquility in which we live will never be disturbed by the appearance of a new system of mountains, the effect of a new dislocation of the surface which we inhabit, and concerning which earthquakes sufficiently admonish us that its foundations are not immoveable.'"

We regret to say, that typographical errours are too common in this volume, for the comfort of the reader, or the *credit* of the proof-reader.

Familiar Lectures on Natural Philosophy, for the Use of Schools. By Mrs. A. H. Lincoln Phelps, Author of "Familiar Lectures on Botany," "Cehmistry," etc. etc. New York: F. J. Huntington, & Co.—Is the title of another very handsome volume from the same publishers. The fair authoress is well known among those interested in education as the sister of Mrs. Emma Willlard, and for a long time principal of the Troy Famale Seminary. She *could* not do other than make a *good* book; and one worthy the attention of teachers.

Squaws ducking Col. Smith—p. 244.

ADVENTURES OF COL. JAMES SMITH.

The subject we have selected for the frontispiece of our present number represents a scene in the adventures of Col. James Smith, who was attached to the army of Braddock—taken prisoner by the Indians and adopted by one of the tribes. He escaped in 1789 and removed to Kentucky, and was for many years a resident of Bourbon county.

In the spring of the year 1755, James Smith, then a youth of eighteen, accompanied a party of three hundred men from the frontiers of Pennsylvania, who advanced in front of Braddock's army, for the purpose of opening a road over the mountain. When within a few miles of the Bedford springs, he was sent back to the rear, to hasten the progress of some wagons loaded with provisions and stores for the use of the road-cutters. Having delivered his orders, he was returning, in company with another young man, when they were suddenly fired upon by a party of three Indians, from a cedar thicket, which skirted the road. Smith's companion was killed on the spot; and although he himself was unhurt, yet his horse was so much frightened by the flash and report of the guns, as to become totally unmanageable, and, after a few plunges, threw him with violence to the ground. Before he could recover his feet, the Indians sprung upon him, and, overpowering his resistance, secured him as a prisoner. One of them demanded, in broken English, whether "more white men were coming up;" and upon his answering in the negative, he was seized by each arm and compelled to run with great rapidity over the mountain until night, when the small party encamped and cooked their supper. An equal share of their scanty stock of provisions was given to the prisoner, and in other respects, although strictly guarded, he was treated with great kindness. On the evening of the next day, after a rapid walk of fifty miles, through cedar thickets, and over very rocky ground, they reached the western side of the Laurel mountain, and beheld, at a little distance, the smoke of an Indian encampment. His captors now fired their guns, and raised the *scalp* halloo! This is a long yell for every scalp that has been taken, followed by a rapid succession of shrill, quick, piercing shrieks, somewhat resembling laughter in its most excited tones. They were answered from the Indian camp below, by a discharge of rifles and a long whoop, followed by shrill cries of joy, and all thronged out to meet the party. Smith expected instant death at their hands, as they crowded around him; but to his surprise, no one offered him any violence. They belonged to another tribe, and entertained the party in their camp with great hospitality, respecting the prisoner as the property of their guests. On the following morning, Smith's captors continued their march, and on the evening of the next day arrived at fort Du Quesne—now Pittsburgh. When within half a mile of the fort, they again raised the scalp halloo, and fired their guns as before. Instantly the whole garrison was in commotion. The cannon were fired—the drums were beaten, and French and Indians ran out in great numbers to meet the party, and partake of their triumph. Smith was again surrounded by a multitude of savages, painted in various colours,
shouting with delight; but their demeanour wa
no means as pacifick as that of the last party he
encountered. They rapidly formed in two
lines, and brandishing their hatchets, ram
switches, &c., called aloud upon him to run
gauntlet. Never having heard of this Indian
mony before, he stood amazed for some time
knowing what to do; but one of his captors
plained to him, that he was to run between the
lines, and receive a blow from each Indian a
passed, concluding his explanation by exhorting
to "run his best," as the faster he ran the soone
affair would be over. This truth was very pla
and young Smith entered upon his race with
spirit. He was switched very handsomely
the lines, for about three fourths of the distance
stripes only acting as a spur to greater exert
and he had almost reached the opposite extremi
the line, when a tall chief struck him a furious
with a club upon the back of the head, and inst
felled him to the ground. Recovering himself
moment, he sprung to his feet and started for
again, when a handful of sand was thrown i
eyes, which, in addition to the great pain, compl
blinded him. He still attempted to grope his
through; but was again knocked down and be
with merciless severity. He soon became ins
ble under such barbarous treatment, and recolle
nothing more, until he found himself in the hos
of the fort, under the hands of a French surg
beaten to a gelly, and unable to move a limb.
he was quickly visited by one of his captors–
same who had given him such good advice,
about to commence his race. He now inqu
with some interest, if he felt "very sore." Y
Smith replied, that he had been bruised almo
death, and asked what he had done to merit
barbarity. The Indian replied, that he had
nothing, but that it was the customary greetin
the Indians to their prisoners—that it was somet
like the English "how d'ye do?" and that nov
ceremony would be laid aside, and he woul
treated with kindness. Smith inquired if they
any news of General Braddock. The Indian
plied that their scouts saw him every day from
mountains—that he was advancing in close col
through the woods—(this he indicated by placi
number of red sticks parallel to each other,
pressed closely together)—and that the Ind
would be able to shoot them down "like pigeo

Smith rapidly recovered, and was soon abl
walk upon the battlements of the fort, with th
of a stick. While engaged in this exercise, o
morning of the 9 ——, he observed an unusual b
in the fort. The Indians stood in crowds at
great gate, armed and painted. Many barrel
powder, ball, flints, &c., were brought out to t
from which each warriour helped himself to
articles as he required. They were soon joine
a small detachment of French regulars, when
whole party marched off together. He had a
view of them as they passed, and was confi
that they could not exceed four hundred men.
soon learned that it was detached against Bradd
who was now within a few miles of the fort;
from their great inferiority in numbers, he rega
their destruction as certain, and looked joyfull

the arrival of Braddock in the evening, as the hour which was to deliver him from the power of the Indians. In the afternoon, however, an Indian runner arrived with far different intelligence. The battle had not yet ended when he left the field; but he announced that the English had been surrounded, and were shot down in heaps by an invisible enemy; that instead of flying at once or rushing upon their concealed foe, they appeared completely bewildered, huddled together in the centre of the ring, and before sun-down there would not be a man of them alive. This intelligence fell like a thunderbolt upon Smith, who now saw himself irretrievably in the power of the savages, and could look forward to nothing but torture or endless captivity. He waited anxiously for further intelligence, still hoping that the fortune of the day might change. But about sunset, he heard at a distance the well-known scalp halloo, followed by wild, quick, joyful shrieks, and accompanied by long-continued firing. This too surely announced the fate of the day. About dusk, the party returned to the fort, driving before them twelve British regulars, stripped naked and with their faces painted black! an evidence that the unhappy wretches were devoted to death. Next came the Indians displaying their bloody scalps, of which they had immense numbers, and dressed in the scarlet coats, sashes, and military hats of the officers and soldiers. Behind all came a train of baggage-horses, laden with piles of scalps, canteens, and all the accoutrements of British soldiers. The savages appeared frantick with joy, and when Smith beheld them entering the fort, dancing, yelling, brandishing their red tomahawks, and waiving their scalps in the air, while the great guns of the fort replied to the incessant discharge of rifles without, he says, that it looked as if the lower regions had given a holiday, and turned loose its inhabitants upon the upper world. The most melancholy spectacle was the band of prisoners. They appeared dejected and anxious. Poor fellows! They had but a few months before left London, at the command of their superiours, and we may easily imagine their feelings, at the strange and dreadful spectacle around them. The yells of delight and congratulation were scarcely over, when those of vengeance began. The devoted prisoners—British regulars—were led out from the fort to the banks of the Allegany, and to the eternal disgrace of the French commandant, were there burnt to death one after another, with the most awful tortures. Smith stood upon the battlements and witnessed the shocking spectacle. The prisoner was tied to a stake with his hands raised above his head, stripped naked, and surrounded by Indians. They would touch him with redhot irons, and stick his body full of pine splinters and set them on fire—drowning the shrieks of the victim in the yells of delight with which they danced around him. His companions in the meantime stood in a group near the stake, and had a foretaste of what was in reserve for each of them. As fast as one prisoner died under his tortures, another filled his place, until the whole perished. All this took place so near the fort, that every scream of the victims must have rung in the ears of the French commandant!

Two or three days after this shocking spectacle, most of the Indian tribes dispersed and returned to their homes, as is usual with them after a great and decisive battle. Young Smith was demanded of the French by the tribe to whom he belonged, and was immediately surrendered into their hands.

The party embarked in canoes, and ascended the Allegany river, as far as a small Indian town about forty miles above fort Du Quesne. There they abandoned their canoes, and striking into the woods, travelled in a western direction, until they arrived at a considerable Indian town, in what is now the state of Ohio. This village was called Tullihas—and was situated upon the western branch of the Muskingum. During the whole of this period, Smith suffered much anxiety, from the uncertainty of his future fate, but at this town all doubt was removed. On the morning of his arrival, the principal members of the tribe gathered around him—and one old man with deep gravity, began to pluck out his hair by the roots, while the others looked on in silence, smoking their pipes with great deliberation. Smith did not understand the design of this singular ceremony, but submitted very patiently to the man's labours, who performed the operation of "picking" him with great dexterity, dipping his fingers in the ashes occasionally, in order to take a better hold. In a very few moments Smith's head was bald, with the exception of a single long tuft upon the centre of his crown, called the "scalp lock." This was carefully plaited in such a manner, as to stand upright, and was ornamented with several silver brooches. His ears and nose were then bored with equal gravity, and ornamented with ear-rings and nose-jewels. He was then ordered to strip—which being done, his naked body was painted in various fantastick colours, and a breech-cloth fastened around his loins. A belt of wampum was then placed around his neck, and silver bands around his right arm. To all this Smith submitted with much anxiety, being totally ignorant of their customs, and dreading lest, like the British prisoners, he had been stripped and painted for the stake. His alarm was increased, when an old chief arose, took him by the arm, and leading him out into the open air, gave three shrill whoops, and was instantly surrounded by every inhabitant of the village—warriours, women and children. The chief then addressed the crowd in a long speech, still holding Smith by the hand. When he had ceased speaking, he led Smith forward, and delivered him into the hands of three young Indian girls, who grappling him without ceremony, towed him off to the river which ran at the foot of the hill, dragged him in the water up to his breast, and all three suddenly clapping their hands upon his head, attempted to put him under. Utterly desperate at the idea of being drowned by these young ladies, Smith made a manful resistance—the squaws persevered and a prodigious splashing in the water took place, amidst loud peals of laughter from the shore. At length, one of the squaws became alarmed at the furious struggles of the young white man, and cried out earnestly several times, "No hurt you! no hurt you!" Upon this agreeable intelligence, Smith's resistance ceased, and these gentle creatures plunged him under the water, and scrubbed him from head to foot with equal zeal and perseverance. As soon as they were satisfied, they led him ashore, and presented him to the chief—shivering with cold, and dripping with water. The Indians then dressed him in a ruffled shirt, leggins, and moccasins, variously ornamented, seated him upon a bear-skin, and gave him a pipe, tomahawk, tobacco, pouch, flint and steel. The chiefs then took their seats by his side, and smoked for several minutes in deep silence, when the eldest delivered a speech, through an interpreter, in the following words: "My son, you are now one of us. Hereafter, you have nothing to fear. By an ancient custom, you have been adopted in the room of a brave man, who has fallen; and every drop of white blood has been washed from your veins. We are now your brothers, and are bound by our law to love you, to defend you, and to avenge your injuries, as much as if you were born in our tribe." He was then introduced to the members of the family into which he had been adopted, and was received by the whole of them with great demonstrations of regard. In the evening, he received an invitation to a great feast—and was there presented with a wooden bowl and spoon, and directed to fill the former from a huge kettle of boiled corn and hashed venison. The evening concluded with a war-dance, and on the next morning, the warriours of the tribe assembled, and leaving one or two hunters, to provide for their families in their absence, the rest marched off for the frontiers of Virginia.

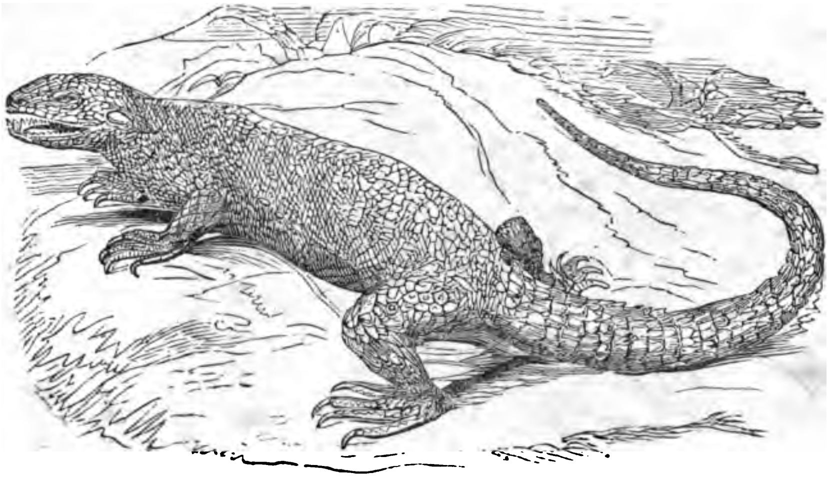
NATURAL HISTORY.

LIZARDS.—Lacerta.

The lizard family is the second family into which Cuvier divides his second order of reptiles, *Sauria*, and following immediately the crocodiles, which some of the larger species resemble a good deal in their appearance, though they are very different in their habits.

Lizards are found chiefly in the warmer parts of the globe; and though many of them frequent marshy places, and the margins of the waters, they are all to be considered as properly land animals, and nc aquatick ones. Many of them can swim, and d take to the water; and some of the larger of these which are of considerable size, though small i comparison with full-grown crocodiles, prey upo small animals in shady places by the sides of th water, and occasionally upon fishes; yet they hav not the strength nor the ferocity of the crocodiles.

The distinguishing characters of the lizards are the tongue slender, extensile, and forming two filaments or branches at the point; as in various kind of serpents, they all move with rapidity, though i this respect there are considerable differences between them; they have five toes on each of thei feet, three to their bases of unequal length, mor especially on the hind feet, and all furnished wit claws. Their bodies are lengthened; and thei scales on the belly and tail are ranged in transvers bands. The tympanum is on the same level wit the head, or only a little raised; a production of th skin, in which there is an opening, which acts as sphincter, protects the eye by acting something i the manner of a third eyelid. The false ribs d not extend entirely round the body so as to form complete circle. The opening of the ear is oval and very conspicuous; but there is not an elevate crest either on the head or along the back. Th tail is, at least, as long as the body. It is of a cylindrical form, and composed of jointed rings, an without upper crests. The feet are all nearly o equal length; and under each thigh there is a rang of small porous scaly tubercles. There are fiv distinct toes on each foot, terminated by crooke claws. A good many of the species are found i woody situations, where they seek their food amon the foliage, or in the underwood. This food consists chiefly of insects. Others inhabit ruinou buildings; and they are even met with near the habitations of man, subsisting partly on insects an partly on vegetables. A few others are found frequenting marshes, ponds, or lakes, where they pre on the small animals which inhabit them. The lizards are, generally speaking, active, lively reptiles and, all circumstances considered, may be reckone the least repulsive of all the saurian tribes. They



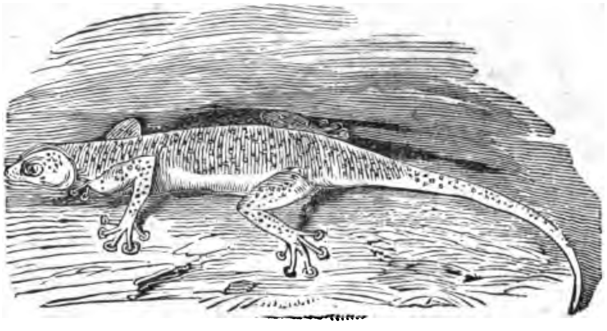
[Lacerta Scincus.]

are perfectly innocent in their manners; and not a few of them are of an agreeable form, and beautifully coloured, constituting pleasing objects in the scenery of tropical countries. This is especially the case with many of the smaller ones, which reside in dry places, and resort to the trees, among which their motions are often so rapid that they bear no inconsiderable resemblance to finely-coloured birds.

Though the true lizards have not the ferocious disposition of the crocodiles, and few or none of them give out those poisonous, or otherwise offensive secretions which are given out by some other saurians, yet there are sometimes prejudices against them merely on account of their form, though others are highly esteemed in consequence of real or supposed services which they render to mankind by destroying animals more offensive than themselves.

The lizards, properly so called, are natives of the eastern continent, and as many of them are interesting, we shall give a brief enumeration of their general characters and the means by which they can be distinguished from those other saurians with which they have been so frequently confounded. The tongue differs little from that of the rest of the family; but the palate is furnished with two rows of teeth. A transverse band of broad scales forms a collar on the under part of the neck; while the part of the neck above and also the belly, or breast immediately below this collar, is covered with small scales. The body is lengthened, and never furnished with wings or flying membranes of any description. The feet have five toes on each, armed with claws, and grasping toward the centre, so as to take a firm hold of even a slight projection; but they are never so formed as to oppose each other in grasping. The bones of the upper part of the head project over the orbits of the eyes and temples, so as to form a sort of canopy, which is either covered with large scales, or consists of one entire plate of scaly matter. The eyes are like those of the rest of the family; and under each thigh there is a row of little rough scaly projections containing pores. The scales on the belly are placed in transverse rows; and those on the back have slight keels; but they do not overlap each other so as to be imbricated like the tiles on a roof. The tail is composed of a great number of articulated joints; and it is round, and without any crest. This tail is exceedingly brittle, and a portion of it can be separated by almost the slightest touch; but it has the property of reproduction in a very short time. Lizards are monogamous, and always found in pairs; they are strictly land animals in their haunts, and never by any chance take to the water. They are found in most warm and dry countries, and in many parts of those which are temperate. In the latter they hibernate; and it is possible that in all countries they pass some considerable portion of the year in a dormant state. When excited by the heat of the sun they are exceedingly active, and have all the energies of life remarkably strong about them; but they can subsist for a very long time without any food. It is also probable that they live for many years; and indeed long life is a very general attribute of those animals which enjoy a seasonal repose in the course of the year. It is easy to see why this should be the case; for the awakening from this repose bears some resemblance to a regeneration of the animal into young life. Perhaps lizards are more susceptible to changes of the atmosphere than any other vertebrated animals; and therefore they may be taken as good indications of the characters of climates. They all live upon insects, and such small prey; and none of them possesses any poisonous quality, or shows any disposition to attack a warm-blooded animal, or, generally speaking, a reptile; but many of them when attacked defend themselves with great resolution, and bite much more keenly than one would be apt to suppose. It is indeed doubtful whether some of the larger species do not prey on the smaller, and also upon the more minute of the serpent tribes. They are abundant in some of the warmer parts of Europe. We shall notice one or two of the species.

The Great Green Lizard. This is one of the most gayly-coloured of the whole family; and it is also the largest of all the true lizards. It occurs in all those parts of Europe which abut upon the Mediterranean, and have the climate and the soil warm. It is not found in the central parts of France, though it often is in the warm and sandy plains of Languedoc, where it pursues its trade of insect-catching with great assiduity during the summer months. The fact of its hybernating does not confine it so closely to tropical latitudes as many other animals which are less sensitive to cold; for it is met with in some places far to the north, or otherwise having the winter very severe. Linnæus enumerates it among the animals of Sweden, and Captain Cook found it in Kamtschatka, where the winter is exceedingly cold, though the summer, both there and in Sweden, is very hot. It is doubtful, however,



[Lacerta Gecko.]

whether there may not be several species confounded in the older descriptions; as spotted, streaked, and gray lizards have been sometimes confounded under the general name of agile or nimble lizards, which is a property common to them all. It is rather a bold animal; and it is sometimes said to swallow mice and other small animals. When attacked it defends itself with great resolution; if its swiftness is not sufficient for enabling it to escape the danger, it will snap and bite readily at a stick; and when a dog attempts to seize it, it will bound upward, and fasten on the nose of the dog during its descent. In many places it is supposed to be poisonous; and in not a few it is looked upon as endowed with supernatural powers of mischief. It is however perfectly innocent both as to the poison and to the league with the powers of darkness, and carries on all its operations by mechanical action, and in the light of the sun. The species and varieties (for the one is not clearly distinguished from the other) are however very many; and the manners of all are so much alike, that we must pass them over. There is, however, one of which some notice may be given, inasmuch as it occurs more abundantly in Europe than any of the others. This is

The Nimble Lizard. This species is exceedingly numerous in France, Austria, and other parts of the Continent, in some of which its flesh is in much request as an article of food; and was once prescribed on account of supposed medicinal qualities, which of course it does not possess. It is so abundant in the neighbourhood of the Austrian capital, that Laurenti recommends it as food for the poor, and says that during the season of its appearance, it would furnish by no means a scanty supply. It is usually termed the gray lizard of the walls, because it is seen very much upon dry walls in gardens during the summer months. In length it varies from five to six inches. The scales on the upper part are of small size and six-sided; the neck is nearly of the same thickness as the body; and the tail tapers to a point. This is a very lively and at the same time a most inoffensive animal, and there is something not unpleasant in the account given of its domestick economy. The couple remain for a long time together, passing their winter in one sleep, and their summer in joint activity. The egg round, about a third of an inch in diameter though it is not understood that any incubati practised by either parent, yet both are attenti the young, seeking food for them, carrying the to the sun when it is clear and warm, and rem them to shelter when it is dark and cold. attentions are continued until the young hav quired sufficient strength to enable them to pr for themselves; and whenever this takes they are expelled from the paternal abode, an to seek habitations of their own. They hav long, however, to continue this operation durin first year of their lives; for the time of hyber comes on soon after they come to maturity.

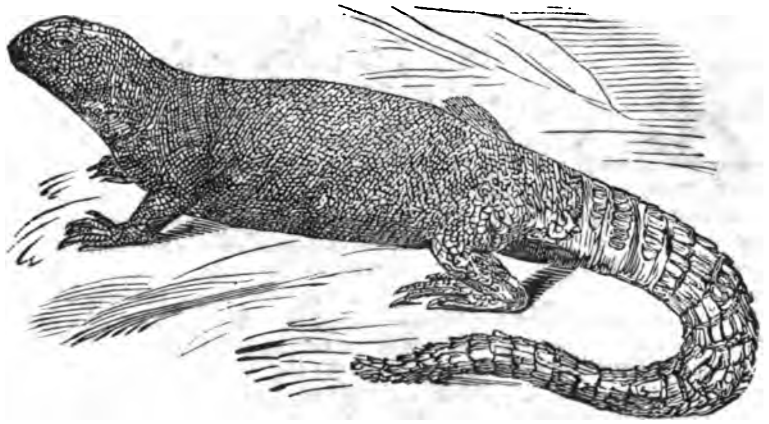
Such is a slight outline of the natural hi and a brief notice of some of the leading sp of what may, perhaps, be regarded as the mo teresting of all the families which compose the of reptiles.

The *Lacerta Scincus*, the first one shown i article, is a species of lizard found in Arabia, and Abyssinia. It is remarkable for the rea with which it forces its way into the sand whe sued, a proof of its strength and activity, seem to be intimated in the Hebrew name force and prowess. There is another speci scincus, the *Sc. Cyprius*, which is of a very size, and abounds in the Levant; it is green, smooth scales. This was perhaps included the common term *Coach.*

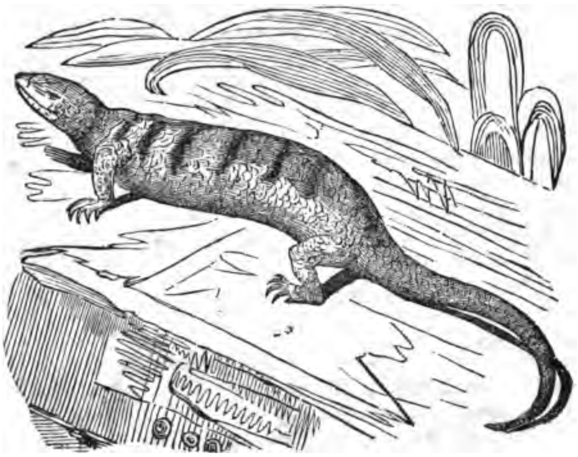
The *Lacerta Gecko*, the one on the opposite is a species of lizard found in countries bor on the Mediterranean; it is of a reddish spotted with brown. It is thought at Cairo to the victuals over which it passes, and especiall provisions, of which it is very fond. It has a resembling somewhat that of a frog, which i mated by the Hebrew name, importing a sigh groan.

The *Stellio Spinipes*, as seen in the engr below, has a swollen body; it is entirely of a tiful green, with small spines upon its thighs upon the ridge of the tail. It is found in the about Egypt.

The *Lacerta Stellio*, a beautiful little liz



[Stellio Spinipes.]



[Lacerta Stellio.]

Arabia, is noted for bowing its head, insomuch that the followers of Mohammed kill it, because they say it mimicks them in the mode of repeating their prayers. It is about a foot in length, and of an olive colour shaded with black.

THE OSPREY, OR FISH-HAWK.

This is the proper fishing-eagle of the European shores, and also the fishing-hawk of America, which is so well described by Wilson. It has also been described as a buzzard, and named the bald buzzard, from the white upon the head. It is smaller than the eagles which are called so *par excellence*.

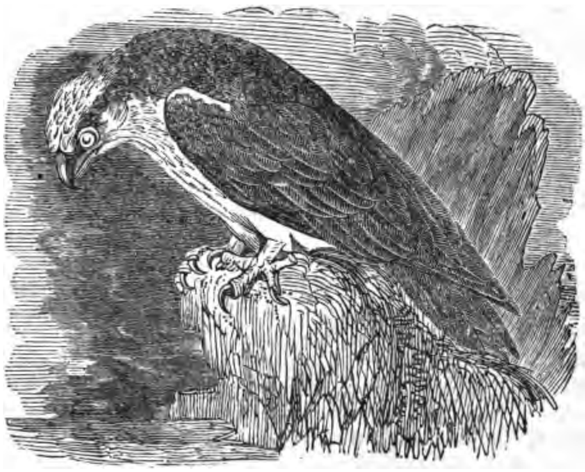
The length of the osprey is about two feet, and the extent of its wings not less than five feet and a half, so that it is better winged in proportion than even the most powerful of the falcons, and may rank among the most aërial of all the birds of prey. The beak of this bird is powerfully formed, very much bent at the tip, furnished with a rudiment of a tooth, and of that dark colour which is always an indication of strength in this order of birds. The tarsi are, like those of the true eagles, very short and strong, but, instead of being feathered as in these, they are covered with reticulated scales, and thus bear some resemblance to those of the wading birds. The claws are very large, more especially that on the outer töe, which is reversible. They are, however, without any ridges or grooves on their under sides, and thus they are clutching claws, and not tearing ones.

The cere, the tarsi, and the toes of the osprey, are grayish blue, the under parts of the toes being abundantly furnished with pads or tubercles. The irides are yellow. The prevailing colour on the upper part is blackish brown, with the exception of the hind part of the head, and part of the neck, which is whitish. A streak of deep brown passes down each side of the neck; and the chin and fore part of the neck are streaked with the same colour, passing into lighter on the breast. The rest of the under part is dull white, passing into pale gray on the vent and tail. The coverts are pale brown, and the quills darker; sometimes relieved with a paler teint on the margins of the feathers, but never possessing any of the rich and warm browns of the land eagles. Three feathers in the middle of the tail are brown, and all the others have white bars on their inner webs. The outer tail-feathers, and first quills of the wings, have their webs very narrow and exceedingly stiff, so that they cannot be ruffled but with the greatest difficulty. The under sides of the wings, and the whole of their marginal parts, as also the plumage on the under parts of the body, are remarkably close and compact, and do not suffer the least injury by being immersed in water. The thighs are feathered down to the articulations of the tarsi; their colour is pure white; but the feathers bear more resemblance to the hair of aquatick animals, than to the feathers of ordinary birds. The young birds have their colours more broken than the old ones; and in very mature age the colours may be stated as being uniform brown on all the upper part except the head, and white on the under part.

The following is Wilson's very graphick description of this bird as it appears on the American waters, where, from the deep embayment of the shores, and the vast extent of broad waters, it is a highly interesting bird:—

"The fish-hawk is migratory, arriving on the coasts of New York and New Jersey, about the twenty-second of September. Heavy equinoctial storms may vary these periods of arrival and departure a few days, but long observation has ascertained that they are kept with remarkable regularity.

"On the arrival of these birds in the northern parts of the United States, in March, they sometimes find the bays and ponds frozen, and experience a difficulty in procuring fish for many days. Yet there is no instance on record of their attacking birds, or inferiour land-animals, with intent to feed on them; though their great strength of flight, as well as of



[Fish-Hawk.]

[Sparrow-Hawk.]

feet and claws, would seem to render this no difficult matter. But they no sooner arrive, than they wage war on the bald eagles, as against a horde of robbers and banditti; sometimes succeeding, by force of numbers and perseverance, in driving them from their haunts, but seldom or never attacking them in single combat.

"The first appearance of the fish-hawk in spring, is welcomed by the fishermen, as the happy signal of the approach of those vast shoals of herring, shad, &c. that regularly arrive on our coasts, and enter our rivers in such prodigious multitudes. Two of a trade, it is said, seldom agree; the adage, however, will not hold good in the present case, for such is the respect paid the fish-hawk, not only by this class of men, but generally by the whole neighbourhood where it resides, that a person who should attempt to shoot one of them, would stand a fair chance of being insulted. This prepossession in favour of the fish-hawk is honourable to their feelings. They associate with its first appearance, ideas of plenty, and all the gayety of business; they see it active and industrious like themselves; inoffensive to the productions of their farms; building with confidence, and without the least disposition to concealment, in the middle of their fields, and along their fences; and returning, year after year, regularly to its former abode.

"The nest of the fish-hawk is usually built on the top of a dead or decaying tree, sometimes not more than fifteen, often upward of fifty, feet from the ground. It has been remarked by the people of the seacoasts, that the most thriving tree will die in a few years after being taken possession of by the fish-hawk. This is attributed to the fish-oil, and to the excrements of the bird; but is more probably occasioned by the large heap of wet salt materials of which the nest is usually composed. In my late excursions to the seashore, I ascended to several of these nests, that had been built in from year to year, and found them constructed as follows:—Externally, large sticks, from half an inch to an inch and a half in diameter, and two or three feet in length, piled to the height of four or five feet, and from tw to three feet in breadth; these were intermixed wi corn-stalks, sea-weed, pieces of wet turf in larg quantities, mullein-stalks, and lined with dry se grass; the whole forming a mass very observable half a mile's distance, and large enough to fill a ca and form no inconsiderable load for a horse. Thes materials are so well put together, as often to adher in large fragments, after being blown down by th wind. About the first of May, the female fish-haw begins to lay her eggs, which are commonly thre in number, sometimes only two, and rarely fou They are somewhat larger than those of the con mon hen, and nearly of the same shape. Th ground colour varies, in different eggs, from a re dish cream, to nearly a white, splashed and daube all over with dark Spanish brown, as if done by a During the time the female is sitting, the male fr quently supplies her with fish; though she occasio ally takes a short circuit to sea herself, but quickl returns again. The attention of the male, on suc occasions, is regulated by the circumstances of th case. A pair of these birds on the south side Great Egg Harbour river, and near its mouth, we noted for several years. The female, having b one leg, was regularly furnished, while sitting, wi fish in such abundance, that she seldom left th nest, and never to seek for food. This kindne was continued both before and after incubatio Some animals who claim the name and rationality man, might blush at the recital of this fact."

THE SPARROW-HAWK.

This is a bird of many names; it is the little fa con, the St. Domingo falcon, the New York merli the American merlin. The female is eleven inche long, and twenty-three inches from tip to tip of th expanded wings; the cere and legs yellow; bill blu tipped with black; space round the eye greenis blue; iris deep dusky; head bluish ash; crow rufous; seven spots of black on a white ground su round the head; whole upper parts reddish ba transversely streaked with black; primary and secondary quills black, spotted on their inner vanes with brownish white; whole lower parts yellowish white, marked with longitudinal streaks of brown, except the chin, vent, and femoral feathers, which are white; claws black. The male sparrow-hawk measures about ten inches, and is about twenty-one inches in the stretch of the wings; the whole upper parts of the head are of a fine slate blue, the shafts of the plumage being black, the crown excepted, which is marked with a bright reddish spot; the slate tapers to a point on each side of the neck; seven black spots surround the head, as in the female, on a reddish white ground, which also borders each sloping side of the blue; line over and under the eye and chin, white; femoral and vent-feathers yellowish white; the rest of the lower parts of the same teint, each feather being streaked down the centre with a long black drop, those on the breast slender, on the sides larger; upper part of the back and scapulars deep reddish bay, marked with ten transverse waves of black; whole wing-coverts, and ends of the secondaries, black, tipped with white, and spotted on their inner vanes with the same; lower part of the back, the rump, and the tail-coverts, plain bright bay; tail rounded, the two exteriour feathers white, their inner vanes beautifully spotted with black; the next bright bay, with a broad band of black near its end, and tipped for half an inch with yellowish white; part of its lower exteriour edge white, spotted with black, and its opposite interiour edge touched with white; the whole of the others are very deep bay, with a single broad band of black near the end, and tipped with yellowish white; cere and legs yellow; orbits the same; bill light blue; iris of the eye dark, almost black; claws blue black.

This species is not confined to the United States, and indeed it is a native of the warm countries rather than the cold ones, being more abundant in the southern states than in the northern, and being especially numerous in St. Domingo or Hayti, and not unknown on the continent of South America. In all probability, indeed, its colours and character may vary in different parts of the vast range of latitude over which it extends, so that it is possible that several of those species about the same size, which have been named as occurring in different parts of the American continent, are nothing more than climatal varieties of this one; and as it is one of the few foreign species of which the characters are tolerably well known, we shall quote from Wilson a short passage descriptive of its manners:—

"It flies rather irregularly, occasionally suspending itself in the air, hovering over a particular spot for a minute or two, and then shooting off in another direction. It perches on the top of a dead tree or pole, in the middle of a field or meadow, and, as it alights, shuts its long wings so suddenly, that they seem instantly to disappear. It sits here in an almost perpendicular position, sometimes for an hour at a time, frequently jerking its tail, and reconnoitring the ground below, in every direction, for mice, lizards, &c. It approaches the farmhouse, particularly in the morning, skulking about the farmyard for mice or young chickens. It frequently plunges into a thicket after small birds, as if at random, but always with a particular, and generally with a fatal, aim. One day, I observed a bird of this species perched on the highest top of a large poplar on the skirts of the wood, and was in the act of raising the gun to my eye, when he swept down with the rapidity of an arrow into a thicket of briers about thirty yards off, where I shot him dead, and, on coming up, found a small field-sparrow quivering in his grasp. Both our aims had been taken at the same instant, and, unfortunately for him, both were fatal. It is particularly fond of watching along hedge-rows and in orchards, where small birds usually resort. When grasshoppers are plenty, they form a considerable part of its food." Wilson adds a very characteristick instance of the delicacy of taste of this falcon in respect to its food:—"Though small snakes, mice, lizards, &c.," says he, "be favourite morsels with this active bird, yet we are not to suppose it altogether destitute of delicacy in feeding. It will seldom or never eat of anything that it has not itself killed, and even that, if not (as epicures would term it) *in good eating order*, is sometimes rejected. A very respectable friend, through the medium of Mr. Bartram, informs me, that one morning he observed one of the hawks dart down on the ground, and seize a mouse, which he carried to a fence-post, where, after examining it for some time, he left it, and, a little while after, pounced upon another mouse, which he instantly carried off to his nest, in the hollow of a tree hard by. The gentleman, anxious to know why the hawk had rejected the first mouse, went up to it, and found it to be almost covered with lice, and greatly emaciated! Here was not only delicacy of taste, but sound and prudent reasoning. If I carry this to my nest, thought he, it will fill it with vermin, and hardly be worth eating. The blue-jays have a particular antipathy to this bird, and frequently insult it by following and imitating its notes so exactly, as to deceive even those well acquainted with both. In return for all this abuse, the hawk contents himself with now and then feasting on the plumpest of his persecutors, who are, therefore, in perpetual dread of him; and yet, through some strange infatuation, or from fear that, if they lose sight of him, he may attack them unawares, the sparrow-hawk no sooner appears than the alarm is given, and the whole force of jays follow." This tendency, which small birds have, to crowd round and annoy their more powerful enemies, is a curious point in natural history, and one the *rationale* of which is not very easily understood; the more so, that it does not hold in the case of the very powerful birds of prey. Nobody, we presume, has seen a flock of birds, either great or small, following and annoying the golden eagle, the jerfalcon, or even the peregrine. It is true that these prey less frequently upon little birds than the smaller hawks; and therefore they do not stand so directly in the character of enemies; but still, as was observed by Wilson, and is reported by American naturalists generally, the ospreys crowd round and annoy the white-headed eagle. The grand object seems to be, so to distract the attention of the enemy, as that he shall not be able to single out any one individual as his victim, but wear himself out in a crowd, the members of which are all equally attractive. This point, if duly worked out, might help to explain the curious subject of *fascination*, which some animals appear to possess over their prey.

POPULAR MEDICAL OBSERVATIONS.

WET FEET.

WHAT a crowd of painful recollections are conjured up in the mind of a physician, of any age and experience, by the words *wet feet.* The child which had been playing about in the morning in all its infantile loveliness and vivacity, is seized at night with croud from wet feet, and in a day or two is a corpse. The youthful form of female beauty, which a few months before gladdened the eyes of every beholder, is wasting in slow, remediless decay. What was the origin of her malady? Wet feet. Let us hope that the exposure was incurred in a visit of mercy to a helpless widow or distressed orphan. Whence come the lingering disease, the pain and suffering of that fond mother? Still the same response: getting her feet wet, while providing suitable winter's clothing for her children—as if tenderness for her offspring justified her dispensing with all the rules of prudence for herself. Thus we might continue the melancholy list of diseases, at best harassing and alarming, often fatal, to which the heedlessness of youth, the pride of manhood, or the avarice of old age, are voluntarily and causelessly exposed by a neglect of one lesson of everyday-experience.

It needs no medical lore nor laboured reasoning to show the great influence which impressions on the feet exert over the rest of the body at large. The real martyrdom produced by tickling them, and the cruel punishment of the bastinado, are sensible evidences of their exquisite delicacy of feeling. Of this fact we have more pleasurable experience in the glow diffused through the whole system, when, chilled and shivering, we hold them for a while to the fire; or when, during the prevalence of the dog-star, we immerse them in cold water to allay the heat which is then coursing through our veins. Are the internal organs of the body a prey to wasting inflammation, as in the hectick fever of consumption, there is a sensation of burning heat in the feet. Is the body feeble and the stomach unable to perform its digestive functions, these parts are habitually cold. In both health and disease there is a constant sympathy between the feet and the different organs of the body. Whatever be the weak part, it suffers with unfailing certainty from the impressions of cold and moisture on the feet. No matter whether the tendency be to sick headache, or sore-throat, hoarseness and cough—pain of the stomach, or rheumatism, or gout—severally and all they will be brought on by getting the feet wet, or at times even by these parts being long chilled, from standing on cold ground or pavement. And who, it might be asked, are the chief victims to such exposures? Not the traveller caught in the storm, or the man of business, nor even the day-labourer, who cannot always watch the appearance of the clouds and pick their steps with an especial avoidance of a muddy soil, or wet streets—O no!—we must look for the largest number of sufferers among the rich, the fair, and the lovely of the land—those who need only walk abroad when invited by the fair blue sky and shining sun—or who, if pleasure calls at other seasons, have all the means of protection against the elemental changes, which wealth can command of ingenuity and labour. They it is who neglect suitable protection for their feet, and brave the snow and rain with such a frail covering as would make the stron man tremble for his own health, were he to be equally daring.

At a season like the present it would seem to b a matter of gratulation, that shoes and boots ca everywhere be obtained of such materials as to preserve the feet dry and warm. Leather of variou kinds, firm, or pliable and soft, is at the shortes warning made to assume every variety of shape an figure, called for by convenience or fashion. B we mistake—fashion, that despotick destroyer o comfort, and too often a sworn foe to health, will n allow the feet of a lady fair to be incased in leathe She must wear forsooth, cloth shoes with a thi leather sole, and even this latter is barely concede A covering for the feet never originally intended t be seen beyond the chamber or parlour, is that no adopted for street parade and travel; and they whos cheeks we would not that the winds of heaven shoul visit too roughly, brave in prunello the extremes c cold and moisture, and offer themselves as willin victims to all the sufferings of the shivering agu catarrh, and pains rheumatick. Tell them of a wise course; argue with some on their duties, as mother and as wives, to preserve their health—with other as daughters of beauty who are risking by approaching disease the loss of their loveliness, and they wi reply, that they cannot wear those horrid large shoe —that leather does not fit so nicely on the feet, an that India-rubber shoes are frightful. They do n reflect that beauty consists in the fitness and harm ny of things, and that we cannot associate it wi the ideas of suffering and disease. The light dr pery so gracefully and elegantly arranged as to e hibit without obtruding her figure, is worthy of a admiration in a Grecian nymph under a Grecian sk and when its wearer is warmed by a southern su The muslin robe of one of our beauties of the bal room, is tasteful and appropriate, where lights ar musick are additions to the scene—but could w preserve our admiration for the Grecian nymph the modern belle, if in these costumes they we seen walking the streets mid sleet and wind? Pi they would assuredly command—but will a fema be content with the offering which any beggar sure of receiving? We have gazed on the fine productions of the chisel and the pencil—we ha studied beauty with the admiration of a lover, ar the purposes of an artist, and we do assure our f male readers that however much we may admire small and finely turned foot when seen trippi through the mazes of the dance, we cannot look u on it with a pleased eye, unprotected by suitab covering in a winter's day. This covering is n prunello or that most flimsy stuff satirically call everlasting.

But how, conceding all the beauty claimed by i admirers to an exhibition of small feet, in neat tig shoes, can we receive this as a substitute for cle complexion, brilliant lustre of the eye, and the mi smile of content, all lost by repeated attacks of cold, or the coming on of dyspepsy and sick hea ache, the consequences of wet and cold feet.

Custom, it is alleged by some, renders perso thus exposed less liable to suffer. But the custo of occasionally walking out in thin cloth shoe which are inadequate covering for the feet, is a ve different thing from the habit of constant exposu of these parts to cold and moisture. If the sandal were habitually worn, and the foot in a great measure exposed to the air, custom, might then be adduced as an argument against increased precautions. It is idle to talk of females accustoming themselves to having their feet chilled, damp, or wet an hour or two in the streets during the day, when for the remainder of this period they take the greatest pains to have them dry and warm, by toasting them, perhaps for hours, before a large fire.

SLEEPING APARTMENTS.

"It must not be forgotten," remarks Hufeland, "that we spend a considerable portion of our lives in the bed-chamber, and consequently that its healthiness or unhealthiness, cannot fail of having a very important influence upon our physical well-being."

Every one, in fact, who is actuated by a due regard for his health and real comfort, will consider an equal degree of attention necessary in regard to the size, situation, temperature and cleanliness of the room he occupies during the hours of repose, as of his parlour, drawing-room, or any other apartment; and yet how often do we find families crowded at night into obscure and confined chambers, of dimensions scarcely more ample than those of an old fashioned closet, while perhaps, in most instances, the best rooms in the house will be set aside for the sole purpose of ostentatious display.

It is all important that the largest and most lofty room, upon the second floor, be appropriated for the sleeping apartment, and that it be freely ventilated, during the daytime, at all seasons, when the weather is not rainy, or otherwise very humid. There are few houses, the rooms of which are so situated as to render the latter impracticable; and the influence of the practice upon the health of the inmates is too important to permit its being neglected from any slight cause.

A bed-chamber should be divested of all unnecessary furniture, and, unless of considerable size, should never contain more than one bed. There cannot be a more pernicious custom, than that pursued in many families, of causing the children, more especially, to sleep in small apartments, with two or three beds crowded into the same room.

It is scarcely necessary to observe, that cleanliness, in the most extensive signification of the term, is, if possible even more necessary, in reference to the bed-chamber, than to almost any other apartment.

The practice of sleeping in an apartment which is occupied during the day is extremely improper. Perfect cleanliness and a sufficiently free ventilation cannot, under such circumstances, be preserved, especially during cold weather; hence, the atmosphere becomes constantly more and more vitiated, and altogether unfitted for respiration.

While too great a degree of caution cannot be observed to avoid sleeping in damp rooms, beds, or clothing, the temperature of the bed-chamber should, if possible, never be augmented, under the ordinary circumstances of health, by artificial means. As this apartment is to be reserved solely for repose, a fire is never necessary, excepting, perhaps, during uncommonly severe weather; and even then the temperature ought not to exceed fifty degrees.

A sleeping apartment, in which a large fire has been kept up for several hours previous to the period of retiring to rest, may to many, at the first view, present an appearance of the most perfect comfort—it is, however, at the same time, a means of very effectually enervating the system—creating an increased susceptibility to the influence of cold, and thus opening the way to the attack of some of the most serious diseases, especially of the chest. Happy may they esteem themselves whose means forbid an indulgence in this species of luxury.

A person accustomed to undress in a room without fire, and to seek repose in a cold bed, will not experience the least inconvenience, even in the severest weather. The natural heat of his body will very speedily render him even more comfortably warm, than the individual who sleeps in a heated apartment, and in a bed thus artificially warmed, and who will be extremely liable to a sensation of chillness as soon as the artificial heat is dissipated. But this is not all—the constitution of the former will be rendered more robust, and far less susceptible to the influence of atmospherical vicissitudes, than that of the latter.

All must be aware, that in the coldest weather, a fire in the bed-chamber can only be necessary during the periods occupied in dressing and undressing. When the individual is in bed it is not only altogether useless, but to a certain extent injurious. It might be supposed, however, that bad effects would result from rising out of a warm bed, of a morning, in a cold chamber. We are assured, however, that if the business of dressing be performed with rapidity, and brisk exercise be taken previously to entering a warm apartment, they who would pursue this plan would render themselves less dependant for comfort upon external warmth—a circumstance of very great importance as a means of guarding against colds, coughs, and consumptions.

We would advise those who are so excessively delicate as to be incapable of passing a few minutes morning and evening, in a cold room, to seek some more genial climate—to such our winter cannot fail to be a season of constant suffering, if not of actual danger.

A practice equally imprudent with that of occupying a heated bed-chamber, during cold weather, is the one very commonly pursued, of attempting to reduce the temperature of this apartment, in summer, by leaving the windows open at night. Many persons have experienced serious and irreparable injury to their health, by being in this manner subjected, while asleep, to a current of cold air from without.

While a free admission of air is permitted throughout the day, the direct rays of the meridian sun, being, however, at the same time as much as possible excluded, the windows of the bed-chamber should be invariably closed after night.

Darkness and quiet being important requisites for natural, tranquil and refreshing repose, no noise or light of any kind is to be permitted in a sleeping apartment, excepting the latter should be rendered absolutely necessary by sickness or other infirmity. Even when from habit, entire darkness has become unnecessary for sound and undisturbed sleep, the burning of candles or of lamps during the night, tends to contaminate the air of the chamber, and in this manner produces occasional mischief. This, it is true, may be, in a great measure, obviated by placing the light upon the hearth within the chimney.

Journal of Health.

A FRAGMENT OF LINEN.

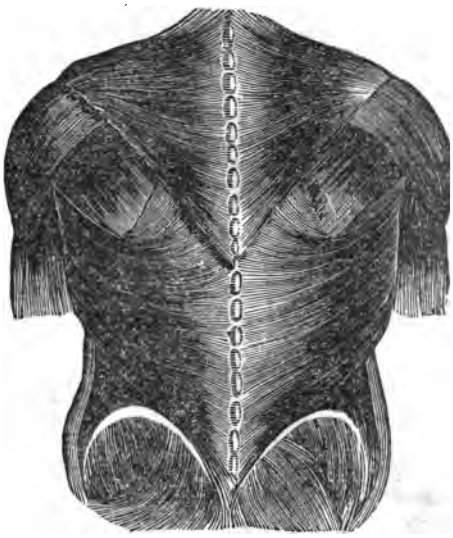
BY MRS. SIGOURNEY.

Would they swept cleaner! Here's a littering shred
Of linen left behind—a vile reproach
To all neat housewifery. Right glad am I
No nice old lady, trained in those good days
Of pudding-making, and of sampler-work,
And speckless sanctity of household care,
Had happened in to spy thee. She, no doubt,
Keen looking, through her spectacles, would say,
"*This comes of reading books:*" or some spruce beau,
Essenced and lily handed, had he chanced
To scan thy slight superficies, 'twould be,
"*This comes of writing poetry:*" Well, well!
Come forth, offender—hast thou aught to say?
Canst thou, by merry thought, or quaint conceit,
Repay the risk that I have run for thee?
Begin at Alpha, and resolve thyself
Into thine elements—the verdant stalk
And bright blue flower of flax, which 'erst outspread
That goodly land where mighty Moses stretch'd
His rod miraculous. I see thy bloom
Soft stealing o'er our blest New England vales—
But lo! the sturdy farmer with his flail
Breakest thy bones unpitying—and his wife,
With kerchief'd head and eyes brimful of dust,
Thy slender nerves with hatchet tooth divides,
——I hear of musick, and behold!
The ruddy damsel singeth at her wheel,
While by her side the rustick lover sits,
And as he listeneth, secretly doth count
The bunch of skeins, which hanging on the wall
Increaseth day by day. Perchance his thought
(*For men have deeper minds than women, sure!*)
Is calculating what a thrifty wife
That fair cheek'd girl will make, and how his shelves
Will bow beneath a weight of golden cheese
Made by her ample hand, while many a keg
And pot of butter to the market borne
Shall, transmigrated, flourish on his back,
A new thanksgiving coat!
                    Fain would I ask
Mine own New England, for thine ancient wheel,
By sofa and piano quite displaced;
Why hast thou banish'd from thy parlour hearths
Thy deep hygeian harp, whose magick ruled
Dyspepsy, as the minstrel-shepherd's skill
Exorcised Saul's ennui?
                    There was no need
In those old times of trim calisthenicks,
And there was less of gadding, and far more
Of home-born, heart-felt comfort, rooted strong
In industry, and bearing precious fruit
Which wealth could never purchase.
                              But come back,
Thou shred of linen! I did let thee drop
In my harangue, as wiser ones have lost
The thread of their discourse. What was thy lot
When the rough battery of the loom had stretch'd
And knit thy sinews, and the chymist sun
Thy brown complexion bleach'd? Methinks I trace
Some idiosyncrasy that marks thee out
A defunct pillowcase. Perchance the guest
To the best chamber usher'd, did admire
The snowy whiteness of thy freshen'd youth,
Stirring thy vanity, or some sweet babe
Pour its pure dream of innocence on thee.
Say, hast thou listened to the moan of pain
When there were none to comfort, or shrank back
From the dire tossings of the proud man's brow,
Or gathered from young beauty's restless sigh
An untold tale of love?
                    But why so mute!
Wilt tell no secrets—ha? Well, then go down
With all thy close-lock'd hoard of curious lore;
In mystery and majesty go down
Into the paper-mill, and from its jaws
Stainless and smooth emerge. Happy shall be
Such renovation, if on thy fair page
Wisdom and truth their hallowed lineaments
Stamp for posterity. So shall thine end
Be better than thy birth, and worthier bard
Thine apotheosis immortalize.

THE HUMAN BODY—No. VI.

From the whole, then, we see that the h body is a congeries of organs; that those organ constructed of a few simple tissues; and th its parts, numerous, diversified, and complex as are, are composed of but three primary forms o mal matter variously modified and combined.

But though by the analysis of its component this machine, so complex in its construction, ar wonderfully endowed, may be reduced to this of simplicity; and although this analytical vie it be highly useful in enabling us to form a conception of the nature of its composition; yet only by considering its individual parts such as actually are, and by studying their situation, con ion, structure, and action, that we can understa as a whole, and apply our knowledge of it to practical use.

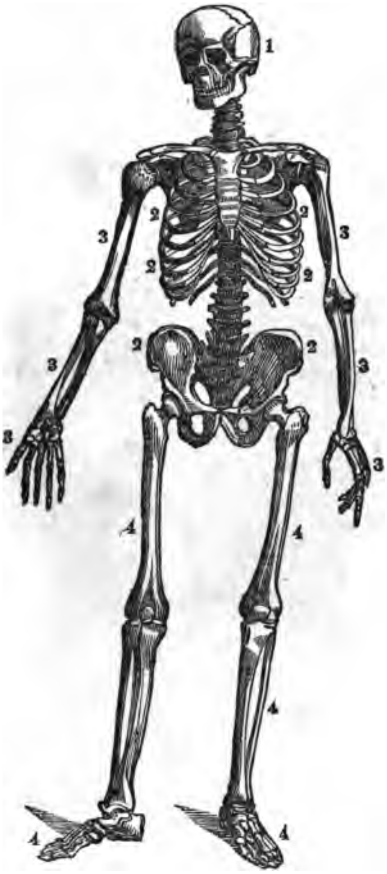


[Muscles of the back and shoulders; showing their symm disposition.]

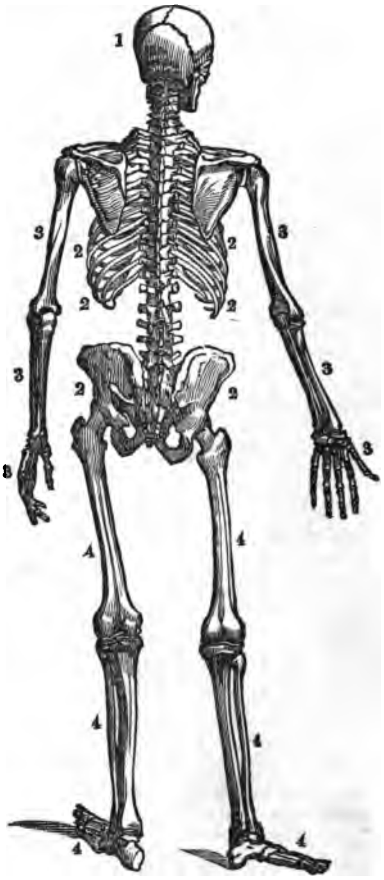
Viewing then the human body as a complic whole, as a congeries of organs made up of va combinations of simple tissues, it may be obse in reference to its external configuration, that rounded. This rounded form is principally o to the large proportion of fluids which enter int composition. The roundness of the face, limbs, entire surface of the child, is in striking contra the unequal and irregular surface of the old whose humours are comparatively very much sm er in quantity.

The length of the human body exceeds its bre and thickness; the degree of the excess varyi different periods of life, and according to the p liar constitution of the individual. In the ext ties, the bones, muscles, vessels, and nerves, are pecially distinguished by their length.

The form of the human body is symmetrical, is, it is capable of being divided into two lateral corresponding halves. Suppose a median lin pass from the vertex of the head through the ce of the spinal column; if the body be well forme will be divided by this line into two exactly e and corresponding portions. This symmetrical



[Front view of the skeleton. 1. the head; 2. the trunk; 3. the superiour extremities; 4. the inferiour extremities.]



[Back view of the skeleton. 1. the head; 2. the trunk; 3. the superiour extremities; 4. the inferiour extremities.]

position of the body is not confined to its external configuration. It is true of many of the internal organs: but principally, as has been already stated, of those that belong to the animal life. The brain and the spinal cord are divisible into two exactly equal halves; the organs of sense are double and symmetrical: the muscles of one side of the body exactly correspond to those of the other; the two hands and arms and the two lower extremities are alike; but for the most part, the organs of the organick life, the stomach, the intestines, the liver, the spleen, for example, are single, and not symmetrical.

POVERTY OF THE MANUFACTURING CLASS.

[Sedgwick's Publick and Private Economy.]

There is something shocking and disgusting in contemplating the degree of suffering existing in the most prosperous parts of a world teeming with natural abundance; even in the United States, too, where the people are working upon a virgin soil, which requires so much less labour and expense for a crop, than old worn-out lands. Is it not shocking to see so many good hard-working people in the United States, who do not own even an acre of land, where land is so cheap, who have not a house, or home, or even fifty dollars with which to help themselves, in case of sickness, or misfortune? Wherever the eye rests, there is something that may be converted into riches for the use of man, so that we may be assured that there will not continue to be the same degree of poverty, that we now see, when the people at large shall have acquired any just ideas of economy, and of the true value of riches. Every one may see, who attends to the subject, that the hard-working people of the United States are now finding out, that their condition is capable of prodigious improvement, and that when they see this clearly, it will be like a new revelation to them. We may be certain, therefore, that an immense simultaneous effort for their improvement such as the world has never witnessed is at hand.

A considerable portion of the manufacturing population in the northern states is supplied in the following way: Many poor broken-down people with large families of children, and especially poor widows, who have been brought into this state by the intemperance of their husbands, resort to the manufactories as the most expedient way of obtaining a living for themselves and their children. In many such cases, the parents place their children in the factories, they keeping boarding-houses. In some parts of the country, there are many children in these factories, under ten years of age; these are sometimes wholly without education, and universally without such an education as they ought to have. These children often work the same number of hours that are allotted to grown-up people. The manufacturing population are almost universally destitute of houses and lots, of gardens, of cows, or any useful domestick animal. As the houses which they occupy generally in the country belong to the owners of the factories; it is plain, that they must live to a great disadvantage in regard to the rent they pay. In these houses, they are so huddled together, that as many as half a dozen, and often many more sleep in one chamber, and this, too, without any proper ventilation. As pure air is essential to life and health and especially when we sleep to recruit our exhausted bodies, this accounts in a great measure for the pale faces, sunken eyes, and emaciated figures of so many of the manufacturing people.

At Lowell, in Massachusetts, which is by far the most important manufacturing place in the United States, the people appeared (1833) to great advantage. Very few children were then employed in the factories, in some scarcely any. The working hours were twelve or twelve and a quarter. Even there the people were crowded together in such a way as none but poor people will ever live. There were (1833) some ranges of wooden houses each about forty-two feet front, and thirty-two in depth, under one roof, but divided into two *tenements*. In each of these *tenements* were boarded at that time, about thirty persons, some rooms contained two or three beds, and sometimes three girls slept in a bed!

The following, among many others, is a striking proof of the melancholy poverty of large numbers of the manufacuring people. They receive their wages in "store pay" in whole or in part. By this is meant that the owners of the factories, are also owners of stores of goods, such as the manufacturers generally want. The owner of the goods receives of course a profit upon them, sometime greater, sometime smaller; and this profit is regulated by a variety of circumstances. Sometimes by contract; by the integrity of the owner; the poverty of the labourer; the advantageous, or disadvantageous way in which the goods have been bought. In some cases the contract is in terms, that the labourer shall take store pay in whole or in part; in others the wages being paid monthly, quarterly, or at the end of six months, and the labourer being often necessitous and in debt; the effect upon him is the same as though he had contracted for store pay.

This store-pay system, which is such a dead weight upon poor people, and all for the want of having a very few dollars in advance of their immediate wants, is called, in England, the "truck system;" a miserable system it is, and might much better be called the truckling system. To the honour of the proprietors and manufacturing people, at Lowell, this system is not known there.

So miserably poor are some of these manufacturing people, that many of them, not only buy their store goods, such as clothing, groceries, &c., of their employers, but nearly every necessary article. In this way, meat, potatoes, and all kinds of common vegetables, are sold by the quantity: first by the farmer to the manufacturer, and by him retailed to the labourer. And why? Because, too often, the labourer has not the cash wherewith to buy. In
these cases, the labourer has not often mon
to buy his dinner.

Poverty of journeymen mechanicks. Her
er numerous class of poor people. In the la
there is not probably one in fifty who own
and lot, not more than one in eight or ten
up a farthing from one year to another.
meant here to state the precise proportio
present the facts as to the poverty of these
people, as accurately as may be, after a
of inquiry.

The city of Pittsburgh, in the state of P
nia, presents to the eye of a stranger a sce
most beautiful and extraordinary indust
said that the mechanicks and other labouri
own there the lots on which they live, t
greater extent, than is common in the Unit
It is said even to be the fashion! This is
of the rich worth following, and better tha
after capes, feathers, ribands, flounces, and
sand gew-gaws, which consume the substa
many poor people. What are these, with
ing being, compared with a house and hon

It would be a wanton aggravation of th
of poor people, thus to expose their povert
was no help for it. There is a help for t
portion of them. But they must put their o
ders to the wheel; they must work out
salvation; there is something to be done.
is to be done? *This is one of the first
be done*—a large portion of the people of t
States who work for wages, and especia
unmarried, can and must lay up yearly o
their wages at least. When this is done, t
pendence will be secured, and the politica
ments which they desire, will be in their
not before.

There is another large portion of the peo
poverty is worthy of particular attention in
where so few are exempt from labour.

This is not a particular class, as mec
professional men, but it embraces some
class, from the highest to the lowest. By
is meant the *fashionable, expensive poor*,
who are made poor mainly by following th
not the good and useful fashions, but the a
wasteful ones. By *fashionable* people, ge
meant, that portion of the rich, and those
ciate with the rich, that adopt expensive
ionable modes of living at their tables, in t
ture, dress, equipage, &c. By *fashionab
pensive poor*, here, is intended all thos
merchants, farmers, mechanicks, day-labo
that live in the imitation of expensive fash
out any proper regard to their wages o
This class, in the United States, embrace
proportion of the people than in any oth
whatever. In other words, travellers and
agree, that the people of the United Sta
many particulars, the most wasteful of a
people on earth.

Many of these fashionable, expensive
stead of having lived upon their income
king the two ends of the year meet, hav
much more than their incomes that they
compelled to see their substance waste fr
day, as a consumptive man sees the fl
from his bones. Of these fashionable,

poor, a large number even of those that belong to the higher classes, are among the poorest people in the United States. If there were weights and scales to weigh human misery by the ounce and pound, it would be found, that these unhappy people suffer more in mind from embarrassments, duns, mortification, offended pride, and conscious meanness and wickedness, at the thought that they are spending the property of their friends, and of honest, hard-working mechanicks and others, than many very poor people do in body, for the want of sufficient clothing, fuel, and food. Striving to be something, which their property will not allow, they are in a perpetual conflict in the worst war in the world—a war with themselves. They do not live by any rule of their own, according to what God has given them, and what it is, therefore, only allowable for them to spend, but they live after a rule set by the fashion of rich people, and thus they see with other people's eyes, whose eyes are their ruin. Instead of having their clothes made in the most economical way, in their own houses, by their wives, daughters, and servants, they run to the fashionable milliners and tailors, at the same time that they are suffering for good substantial, seasonable garments. Their whole wardrobe often, setting aside the finery, would hardly pay for an auction; they would be ashamed to show it; to have it exposed to daylight, to have their under garments seen.

Their domestick condition is equally mean. Some of them in the cities live in expensive houses, and promise to pay large rents, perhaps five hundred dollars a year, and often, much more. This rent is often paid by their richer relatives, and often not at all. Their parlours and drawing-rooms are full of what they call splendour, that is, finery; if they have valuable pictures, it is ten to one, that these are put in the shade in order to show their fine curtains to better advantage.

If you go out of this region of splendour and magnificence, the real barrenness of the territory, in good, useful things, appears. In the kitchen, and other apartments, there is not a decent sufficiency of proper cooking utensils, tubs, kettles, dishes, carpets, and other conveniences for health, comfort, and cleanliness. Nothing is so mean, as the real poverty of these people, but their pride.

MOUNT HOR.

[Incidents of Travel in Egypt, Arabia Petræa, and the Holy Land. By an American—in two vols.—New York: Harper & Brothers, 1837.]

In our notice of the publication of this extremely entertaining work, some time since, we promised to make some extracts. We are enabled now to redeem our pledge, and with the more satisfaction to ourselves, inasmuch as we can, by means of good engravings, illustrate the subjects and scenery which the author has so happily described.

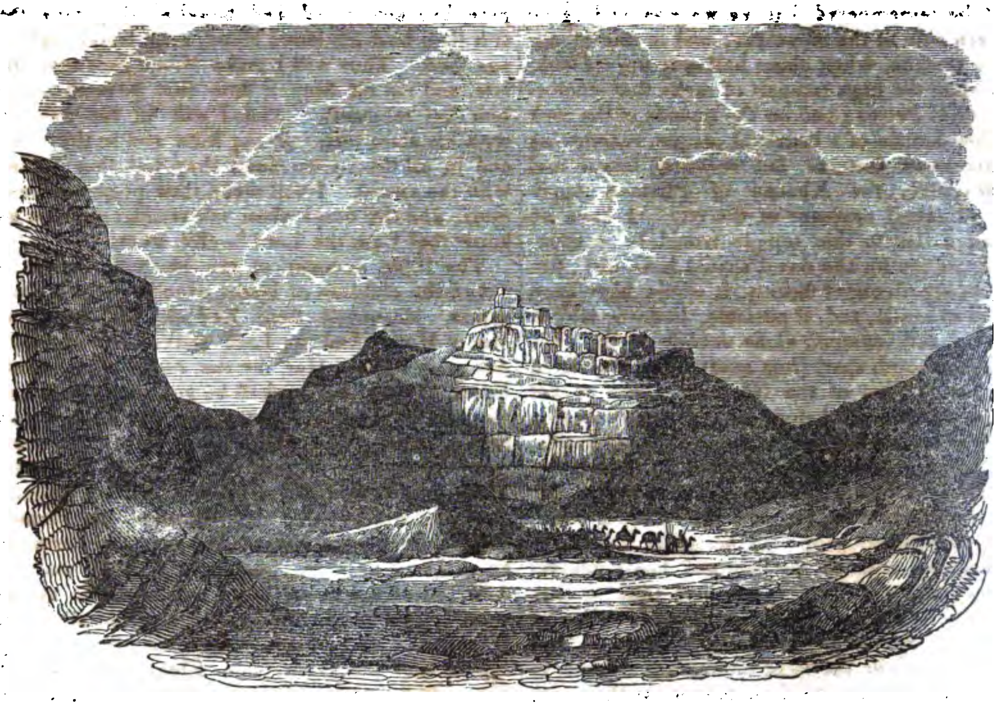
The engravings are from Laborde, a traveller who passed over much the same rout as Mr. Stephens, several years before.

Our author thus describes his ascent of Mount Hor, and the tomb of Aaron:—

A man rising from a tomb with all his clothes on does not require much time for the arrangement of his toilet. In less than half an hour we had breakfasted, and were again on our way. Forgetting all that had engrossed my thoughts and feelings the day before, I now fixed my eyes upon the tomb of Aaron, on the summit of Mount Hor. The mountain was high, towering above all the rest, bare and rugged to its very summit, without a tree or even a bush growing on its steril side; and our road lay directly along its base. The Bedouins again began to show an unwillingness to allow my visit to the tomb; and the sheik himself told me that it would take half the day, and perhaps be the means of bringing upon me some of the horde I had escaped. I saw that they were disposed to prevent me from accomplishing my object; and I felt sure that if we met any strange Arabs, my purpose would certainly be defeated. I suspected them of stratagem, and began to think of resorting to stratagem for myself. They remembered the sheep, however, and told me that the sacrifice could as well be performed at the base as on the summit of the mountain; but this, of course, would not satisfy my conscience.

With my eyes constantly fixed on the top of the mountain, I had thought for some time that it would not be impracticable to ascend from the side on which I was. Paul and I examined the localities as carefully as a couple of engineers, seeking an assailable place to scale the wall of a fortified city; and afraid to wait till they had matured some plan of opposing me, I determined to take them by surprise; and, throwing myself from my horse, and telling Paul to say that we would climb the mountain here, and meet them on the other side, I was almost out of hearing before they had recovered from their astonishment. Paul followed me, and the sheik and his men stood for some time without moving, irresolute what to do; and it was not until we had advanced considerably on the mountain, that we saw the caravan again slowly moving along its base. None of them offered to accompany us, though we should have been glad to have had one or two with us on our expedition.

For some distance we found the ascent sufficiently smooth and easy—much more so than that of Mount Sinai—and, so far as we could see before us, it was likely to continue the same all the way up. We were railing at the sheik for wanting to carry us around to the other side, and congratulating ourselves upon having attempted it here, when we came to a yawning and precipitous chasm, opening its horrid jaws almost from the very base of the mountain. From the distance at which we had marked out our route, the inequalities of surface could not be distinguished, but here it was quite another thing. We stood on the brink of the chasm, and looked at each other in blank amazement; and at a long distance, as they wound along the base of the mountain, I thought I could see a quiet smile of derision lighting up the grim visages of my Bedouin companions. We stood upon the edge of the chasm, looking down into its deep abyss, like the spirits of the departed lingering on the shores of the Styx, vainly wishing for a ferryman to carry them over, and our case seemed per



[Mount Hor.—From Laborde.]

fectly hopeless without some such aid. But the days when genii and spirits lent their kind assistance to the sons of men are gone; if a man finds himself in a ditch, he must get out of it as well as he can, and so it was with us on the brink of this chasm. Bad, however, as was our prospect in looking forward, we had not yet begun to look back; and as soon as we saw that there was no possibility of getting over it, we began to descend; and groping, sliding, jumping, and holding on with hands and feet we reached the bottom of the gully; and, after another hard half hour's toil, were resting our wearied limbs upon the opposite brink, at about the same elevation as that of the place from which we had started.

This success encouraged us; and, without caring or thinking how we should come down again, we felt only the spirit of the seaman's cry to the trembling sailor boy, "Look aloft, you lubber;" and looking aloft, we saw, through a small opening before us, though still at a great distance, the white dome that covered the tomb of the first high-priest of Israel. Again with stout hearts we resumed our ascent; but, as we might reasonably have supposed, that which we had passed was not the only chasm in the mountains. What had appeared to us slight inequalities of surface we found great fissures and openings, presenting themselves before us in quick succession, not, indeed, as absolute and insurmountable barriers to farther progress, but affording us only the encouragement of a bare possibility of crossing them. The whole mountain, from its base to its summit, was rocky and naked, affording not a tree or bush to assist us; and all that we had to hold on by were the rough and broken corners of the porous
sandstone rocks, which crumbled in our han
under our feet, and more than once put us in
of our lives. Several times, after desperate
tion, we sat down perfectly discouraged at
another and another chasm before us, and mor
once we were on the point of giving up the at
thinking it impossible to advance any farthe
we had come so far, and taken so little notice
road, that it was almost as impossible to retur
a distant and accidental glimpse of the wh
dome would revive our courage, and stimulat
another effort. Several times I mounted on
shoulders, and with his helping reached the
a precipitous or overhanging rock, where, lyin
with my face over the brink, I took up the
swords, &c., and then helped him up in turn;
times, again, he was the climber, and my sh
were the stepping-stone; and, in the rough
that we gave each other, neither thought of th
tion of master and servant. On the sides
rugged mountain so desolate, so completely re
from the world, whose difficult assent had b
tempted by few human footsteps since th
when "Moses and Aaron went up in sight of
congregation," the master and the man lay
same rock, encountering the same fatigues an
gers, and inspired by the same hopes and fear
dress was particularly bad for the occasion;
sides the encumbrance of pistols and a swo
long silk gown and large sleeves were a gr
noyance, as I wanted every moment a long re
the arm and full play of the legs; even ou
Turkish slippers were impediments in our de
scramble, and we were obliged to pull them
the better hold that could be taken with the nak

It will be remembered that we were ascending on the eastern side of the mountain; and in one of our pauses to breathe, when about half way up, we looked back upon the high rampart of rocks that enclosed the city of Petrea; and on the outside of the rock we saw the facade of a beautiful temple, resembling in its prominent features, but seeming larger and more beautiful, the Khasne of Pharaoh opposite the principal entrance of the city. I have no doubt that a visit to that temple would have abundantly repaid me for the day I should have lost; for, besides its architectural beauty, it would have been curious to examine, and, if possible, discover why it was constructed, standing alone outside of the city, and, as it appeared, apart from every thing connected with the habitations of the Edomites. But as yet we had work enough before us. Disencumbering ourselves of all our useless trappings, shoes, pistols, swords, tobacco-pouch, and water-sack, which we tied together in a sash and the roll of a turban, by dint of climbing, pushing, and lifting each other, after the most arduous upward scramble I ever accomplished, we attained the bald and hoary summit of the mountain; and, before we had time to look around, at the extreme end of the desolate valley of El Ghor, our attention was instantly attracted and engrossed by one of the most interesting objects in the world, and Paul and I exclaimed at the same moment, "The Dead Sea!" Lying between the barren mountains of Arabia and Judea, presenting to us from that height no more than a small, calm, and silvery surface, was that mysterious sea which rolled its dark waters over the guilty cities of Sodom and Gomorrah; over whose surface, according to the superstition of the Arabs, no bird can fly, and in whose waters no fish can swim; constantly receiving in its greedy bosom the whole body of the Jordan, but, unlike all other waters, sending forth no tribute to the ocean. A new idea entered my mind. I would follow the desert valley of El Ghor to the shores of the Dead sea, along whose savage borders I would coast to the ruined Jericho and the hallowed Jordan, and search in its deadly waters for the ruins of the doomed and blasted cities.

If I had never stood on the top of Mount Sinai, I should say that nothing could exceed the desolation of the view from the summit of Mount Hor, its most striking objects being the dreary and rugged mountains of Seir, bare and naked of trees and verdure, and heaving their lofty summits to the skies, as if in a vain and fruitless effort to excel the mighty pile, on the top of which the high-priest of Israel was buried. Before me was a land of barrenness and ruin—a land accursed by God, and against which the prophets had set their faces; the land of which it is thus written in the book of life: "Moreover, the word of the Lord came unto me, saying, Son of man, set thy face against Mount Seir, and prophesy against it, and say unto it, Thus saith the Lord God, Behold, oh Mount Seir, I am against thee, and I will stretch out mine hand against thee, and I will make thee most desolate. I will lay thy cities waste, and thou shalt be desolate; and thou shalt know that I am the Lord. Because thou hast had a perpetual hatred, and hast shed the blood of the children of Israel by the force of the sword in the time of their calamity, in the time that their iniquity had an end: Therefore, as I live, saith the Lord God, I will prepare thee unto blood, and blood shall pursue thee: sith thou hast not hated blood, even blood shall pursue thee. Thus will I make Mount Seir most desolate, and cut off from it him that passeth out and him that returneth. And I will fill his mountains with his slain men: in thy hills, and in thy valleys, and in all thy rivers, shall they fall that are slain with the sword. I will make thee perpetual desolations, and thy cities shall not return: and ye shall know that I am the Lord."—Ez. xxxv.

The Bible account of the death of Aaron is—"And the children of Israel, even the whole congregation, journeyed from Kadesh, and came unto Mount Hor. And the Lord spake unto Moses and Aaron in Mount Hor, by the coast of the land of Edom, saying, Aaron shall be gathered unto his people: for he shall not enter into the land which I have given unto the children of Israel, because he rebelled against my word at the water of Meribah. Take Aaron and Eleazar his son, and bring them up unto Mount Hor; and strip Aaron of his garments, and put them upon Eleazar his son: and Aaron shall be gathered unto his people, and shall die there. And Moses did as the Lord commanded: and they went up into Mount Hor, in the sight of all the congregation. And Moses stripped Aaron of his garments, and put them upon Eleazar his son; and Aaron died there in the top of the mount; and Moses and Eleazar came down from the mount. And when all the congregation saw that Aaron was dead, they mourned for Aaron thirty days, even all the house of Israel."—Num. xx.

On the very "top of the mount," reverenced alike by Mussulmans and Christians, is the tomb of Aaron. The building is about thirty feet square, containing a single chamber; in front of the door is a tombstone, in form like the oblong slabs in our churchyards, but larger and higher; the top rather larger than the bottom, and covered with a ragged pall of faded red cotton in shreds and patches. At its head stood a high round stone, on which the Mussulman offers his sacrifices. The stone was blackened with smoke: stains of blood and fragments of burnt brush were still about it; all was ready but the victim; and when I saw the reality of the preparations, I was very well satisfied to have avoided the necessity of conforming to the Mussulman custom. A few ostrich eggs, the usual ornaments of a mosque, were suspended from the ceiling, and the rest of the chamber was perfectly bare. After going out, and from the very top of the tomb surveying again and again the desolate and dreary scene that presented itself on every side, always terminating with the distant view of the Dead sea, I returned within; and examining once more the tomb and the altar, walked carefully around the chamber. There was no light except what came from the door; and, in groping in the extreme corner on one side, my foot descended into an aperture in the floor. I put it down carefully, and found a step, then another, and another, evidently a staircase leading to a chamber below. I went down till my head was on the level of the floor, but could see nothing; all was dark, and I called to Paul to strike a light. Most provokingly he had no materials with him. He generally carried a flint and steel for lighting his pipe with; but now, when I most wanted it he had none. I went back to the staircase, and descending to the bottom of the steps, attempted to make out what the place might be; but it was utterly impossible. I could not see even the steps on which I stood. I again came out, and made Paul search in all his pockets for the steel and flint. My curiosity increased with the difficulty of gratifying it; and in a little while, when the thing seemed to be utterly impossible, with this hole unexplored, Petra, Mount Hor, and the Dead sea, appeared to lose half their interest. I ran up and down the steps, inside and out, abused Paul, and struck stones together in the hope of eliciting a spark; but all to no purpose. I was in an agony of despair, when, suddenly I found myself grasping the handle of my pistol. A light broke suddenly upon me. A pile of dry brush and cotton rags lay at the foot of the sacrificial altar; I fired my pistol into it, gave one puff, and the whole mass was in a blaze. Each seized a burning brand, and we descended. At the foot of the steps was a narrow chamber, at the other end an iron grating, opening in the middle, and behind the grating a tomb cut in the naked rock, guarded and reverenced as the tomb of Aaron. I tore aside the rusty grating, and thrusting in my arm up to the shoulders, touched the hallowed spot. The rocks and mountains were echoing the discharge of my pistol, like peals of crashing thunder; and while, with the burning brand in one hand, I was thrusting the other through the grating, the deafening reverberations seemed to rebuke me for an act of sacrilege, and I rushed up the steps like a guilty and fear-struck criminal. Suddenly I heard from the foot of the mountain a quick and irregular discharge of firearms, which again resounded in loud echoes through the mountains. It was far from my desire that the bigoted Mussulmans should come upon me and find me with my pistol still smoking in my hand, and the brush still burning in the tomb of the prophet; and tearing off a piece of the ragged pall, we hurried from the place and dashed down the mountain on the opposite side, with a speed and recklessness that only fear could give. If there was room for question between a scramble or a jump, we gave the jump; and, when we could not jump, our shoes were off in a moment, one leaned over the brow of the precipice, and gave the other his hand, and down we went, allowing nothing to stop us. Once for a moment we were at a loss; but Paul, who, in the excitement of one successful leap after another, had become amazingly confident, saw a stream of water, and made for it with the glorious boast that where water descended we could; and the suggestion proved correct, although the water found much less difficulty in getting down than we did. In short, after an ascent the most toilsome, and a descent the most hair-brained and perilous, it was ever my fortune to accomplish, in about half an hour we were at the base of the mountain, but still hurrying on to join our escort."

APPROACH TO THE CONVENT ON MOUNT SINAI—DESCRIPTION OF THE BUILDING.

"The whole day we were moving between parallel ranges of mountains, receding in some places, and then again contracting, and at about mid-day entered a narrow and rugged defile, bounded on each side with precipitous granite rocks more than one thousand feet high. We entered at the very bottom of this defile, moving for a time along the dry bed of a torrent, now obstructed with sand and ston
rocks on every side shivered and torn, and the
scene wild to sublimity. Our camels stumbled
the rocky fragments to such a degree that
mounted, and passed through the wild defile
At the other end we came suddenly upon a p
ble of ground, and before us towered in awfu
deur, so huge and dark that it seemed close to
barring all further progress, the end of my pilgr
the holy mountain of Sinai. On our left was
insulated stone, rudely resembling the chair cal
chair of Moses, on which tradition says that Mos
ed himself when he came up with the people un
charge; farther on, upon a little eminence, ar
rude stones which are pointed out as the ruins
house of Aaron, where the great high-priest dis
ed to the wandering Israelites. On the righ
stone, alleged to be the petrified golden calf.
was not necessary to draw upon false and fri
legends to give interest to this scene; the n
of nature was enough. I felt that I was on
ground, and, dismounting from my dromedary,
ed for more than an hour in the valley. It wa
and I sent my shivering Bedouins forward, s
ing myself to be at the foot of the mountain, a
gered there until after the sun had set. It wa
dark as alone, and on foot, I entered the last
leading to the holy mountain. The moon had
but her light could not penetrate the deep
through which I was toiling slowly on to the
Sinai. From about half way up it shone with
and solemn lustre, while below all was in the
est shade, and a dark spot on the side of the
ain, seeming perfectly black in contrast wi
light above it, marked the situation of the co
I passed a Bedouin tent, under which a gro
Arabs were sleeping around a large fire, and in
moments stood at the foot of the convent wall
camels were lying down eating their evening
and my Bedouins were asleep on the ground
under the walls.

Knowing that they would not be admitted
selves, they had not demanded entrance; an
had not told them to do so, they had not given
of my coming. The convent was a very large
ing, and the high stone walls surrounding
turrets at the corners, gave it the appearanc
fortress. Exposed as they are to occasional
by the Bedouins, the holy fathers are som
obliged to have recourse to carnal weapons.
walls are accordingly mounted with canno
there is no entrance except by a subterranea
sage under the garden, or by a small door in
the walls, about thirty feet from the ground
Bedouins had stopped under this door, and h
commenced shouting for admission, first singl
then all together, in French, English, and Ar
but no one came to admit us. I was stron
minded of the scene under the walls of the litt
vent in the desert, on my attempted expedition
great Oasis. Then, as now, it was a moonlight
and the scene was a convent, a lonely habita
Christians, with its door closed against a
Christian. I remembered that then I had
my way in, and make my own welcome, and I
ved that no trifle should keep me from an en
here. The convent belonged to the Greek c
I did not know how many monks were in it, o

[Convent of St. Catherine, on Mount Sinai.—From Laborde.]

was the sanctity of their lives, but I wished that some of them had slept with more troubled consciences, for we made almost noise enough to wake the dead; and it was not until we had discharged two volleys of firearms that we succeeded in rousing any of the slumbering inmates. On one side were two or three little slits or portholes, and a monk, with a long white beard, and a lighted taper in his hand, cautiously thrust out his head at one of them, and demanded our business. This was soon told; we were strangers and Christians, and wanted admission; and had a letter from the Greek patriarch at Cairo. The head disappeared from the loophole, and soon after I saw its owner slowly open the little door, and let down a rope for the patriarch's letter. He read it by the feeble glimmer of his lamp, and then again appeared at the window, and bade us welcome. The rope was again let down; I tied it around my arms; and after dangling in the air for a brief space, swinging to and fro against the walls, found myself clasped in the arms of a burly, long-bearded monk, who hauled me in, kissed me on both cheeks, our long beards rubbing together in friendly union, and untwisting the rope, set me upon my feet, and passed me over to his associates.

By this time nearly all the monks had assembled; and all pressed forward to welcome me. They shook my hand, took me in their arms, and kissed my face; and if I had been their dearest friend just escaped from the jaws of death, they could not have received me with a more cordial greeting. Glad as I was, after a ten days' journey, to be received with such warmth by these recluses of the mountains, I could have spared the kissing. The custom is one of the detestable things of the East. It would not be so bad if it were universal, and the traveller might sometimes receive his welcome from rosy lips; but, unhappily, the women hide their faces and run away from a stranger, while the men rub him with their bristly beards. At first I went at it with a stout heart, flattering myself that I could give as well as take; but I soon flinched and gave up. Their beards were the growth of years; while mine had only a few months to boast of, and its downward aspirations must continue many a long day before it would attain the respectable longitude of theirs.

During the kissing scene, a Bedouin servant came from the other end of the terrace, with an armful of burning brush, and threw it in a blaze upon the stony floor. The monks were gathered around, talking to me and uttering assurances of welcome, as I knew them to be, although I could not understand them; and, confused and almost stunned with their clamorous greeting, I threw myself on the floor, thrust my feet in the fire, and called out for *Paul*. Twice the rope descended and brought up my tent, baggage, &c.; and the third time it brought up Paul, hung round with guns, pistols, and swords, like a travelling battery. The rope was wound up by a windlass, half a dozen monks, in long black frocks with white stripes, turning it with all their might. In the general eagerness to help, they kept on turning until they had carried Paul above the window, and brought his neck up short under the beam, his feet struggling to hold on to the sill of the door. He roared out lustily in Greek and Arabick; and while they were helping to disencumber him of his multifarious armour, he was cursing and berating them for a set of blundering workmen, who had almost broken the neck of as good a Christian as any among them. Probably, since the last incursion of the Bedouins, the peaceful walls of the convent had not been disturbed by such an infernal clatter."

* * * * * * * *

"In the afternoon I lounged about the interiour of the convent. The walls form an irregular quadrangle, of about one hundred and thirty paces on each side, and, as I before remarked, it has the appearance of a small city. The building was erected by the Emperess Helena, the mother of the first Christian emperour, and I might almost call her the mother of the Holy Land. Her pious heart sent her, with the same spirit which afterward animated the crusaders, to search out the holy places referred to in the Bible, and when she found one, she erected a monument to mark it, for the guidance of future Christians; and the pilgrim may see the fruits of her pious labours from the mountain where God spake in thunder, down to the place where the cock crew when Peter denied his master.

The convent is capable of containing several hundred people. It was originally built as a place of defence; but the necessity of keeping it fortified has passed away: a parcel of rusty guns are lying in a sort of armory, and a few small cannon are frowning from the walls. The cells of the monks, compared with any thing else I had seen in the East, are exceedingly comfortable; on one side, raised about a foot from the floor, is a stone platform, on which the monk spreads his mat and coverlet, and the furniture includes a table, chairs, sometimes two or three books, and the fragment of a looking-glass. There are twenty-four chapels erected to different saints, in which prayers are said regularly in rotation. I went through them, but saw nothing to interest me until I came to the church of the convent. Here I was surprised to find the handsomest Greek church I had seen, except in Russia; the floor and steps were of marble; and distributed around in various places were pillars and columns, the works of ancient artists, plundered from heathen temples, and sent to this lonely spot in the desert by the active piety of the early Christian emperours. The convent was raised in honour of the transfiguration, and the dome of the altar contains a coarse but antique painting of the holy scene. In front, near the great altar in a coffin covered with rich palls, and a silver lid, are the bones of St. Catharine, the patroness of the convent. Among the chapels, one, I remember, is dedicated to Constantine and Helena, and another to Justinian and his wife; but the great object of interest is the holy of holies, the spot where God appeared to Moses in the burning bush. A chapel is now erected over it, and the pilgrim, on entering, hears at this day almost the same words which God addressed to Moses, "Put thy shoes from off thy feet, for the ground whereon thou treadest is holy ground;" I pulled off my shoes and followed my conducter. The place is now bedizened with Grecian ornaments; the rude simplicity of nature which beheld the interview between God and his servant is utterly gone, and the burning bush is the last thing one would think of on the spot where it grew. There are b few objects of interest besides. In one of the cha els are a copy of the Evangelists, written in lette of gold by the Emperour Theodosius, and portrai of the four evangelists and the twelve apostles, a all the psalms of David, written in an inconceivab small space by a young virgin who came out a died in the desert."

PETRA, THE EXCAVATED CITY.

"Petra, the excavated city, the long lost capital Edom, in the scriptures and profane writings, every language in which its name occurs, signifie a rock; and, through the shadows of its early hi tory, we learn that its inhabitants lived in natur clefts or excavations made in the solid rock. De olate as it now is, we have reason to believe that goes back to the time of Esau, 'the father of E om;' that princes and dukes, eight successiv kings, and again a long line of dukes, dwelt ther before any king 'reigned over Israel;' and we re ognise it from the earliest ages, as the central poi to which came the caravans from the interiour Arabia, Persia, and India, laden with all the preciou commodities of the East, and from which thes commodities were distributed through Egypt, Palestine, and Syria, and all the countries bordering o the Mediterranean, even Tyre and Sidon derivin their purple and dies from Petra. Eight hundre years before Christ, Amaziah, the king of Jude 'slew of Edom in the valley of Salt ten thousan and took Selah (the Hebrew name of Petra) b war.' Three hundred years after the last of th prophets, and nearly a century before the Christia era, the 'king of Arabia' issued from his palace a Petra, at the head of fifty thousand men, horse an foot, entered Jerusalem, and uniting with the Jews pressed the siege of the temple, which was onl raised by the advance of the Romans; and in th beginning of the second century, though its independence was lost, Petra was still the capital of Roman province. After that time it rapidly declined; its history became more and more obscure for more than a thousand years it was completely los to the civilized world; and, until its discovery b Burckhardt in 1812, except to the wandering Bedouin its very site was unknown.

And this was the city at whose door I now stood In a few words, this ancient and extraordinary cit is situated within a natural amphitheatre of two o three miles in circumference, encompassed on al sides by rugged mountains five or six hundred fee in height. The whole of this area is now a wast of ruins, dwelling-houses, palaces, temples, and triumphal arches, all prostrate together in undistinguishable confusion. The sides of the mountains are cut smooth, in a perpendicular direction, and filled with long and continued ranges of dwelling-houses, temples, and tombs, excavated with vas labour out of the solid rock; and while their summits present Nature in her wildest and most savage form, their bases are adorned with all the beauty o architecture and art, with columns, and porticoes, and pediments, and ranges of corridors, enduring as the mountains out of which they are hewn, and fresh as if the work of a generation scarcely ye gone by.

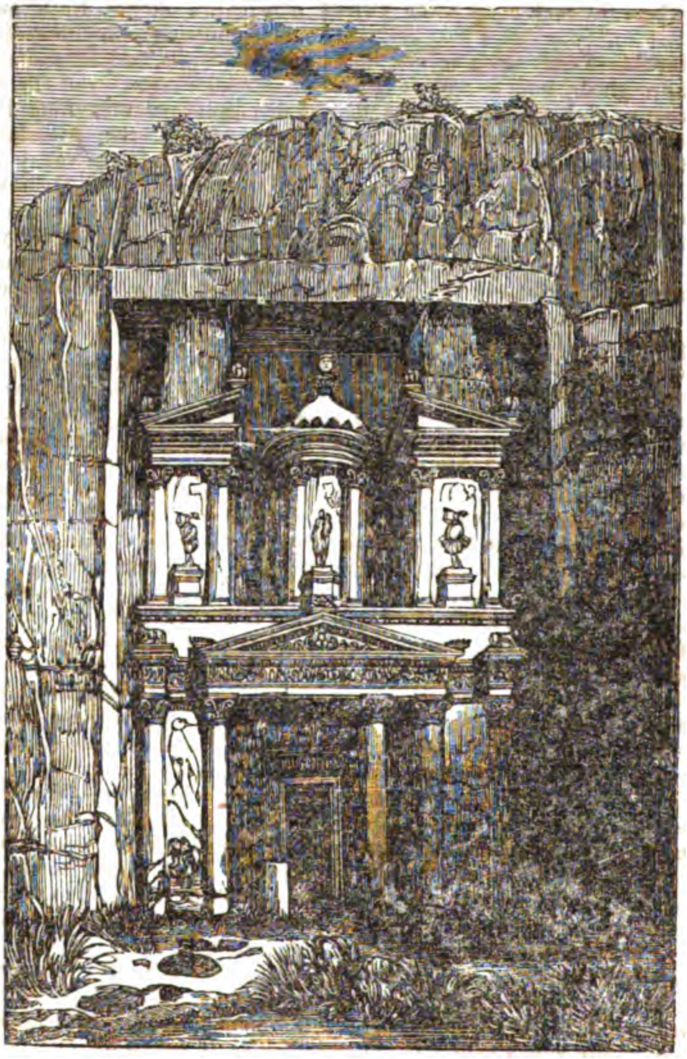
Nothing can be finer than the immense rocky rampart which encloses the city. Strong, firm, and immoveable as nature itself, it seems to deride the walls of cities, and the puny fortifications of skilful engineers. The only access is by clambering over this wall of stone, practicable only in one place, or by an entrance the most extraordinary that Nature, in her wildest freaks, has ever framed. The loftiest portals ever raised by the hands of man, the proudest monuments of architectural skill and daring, sink into insignificance by the comparison."

* * * * * * * *

"For about two miles it lies between high and precipitous ranges of rocks, from five hundred to a thousand feet in height, standing as if torn asunder by some great convulsion, and barely wide enough for two horsemen to pass abreast. A swelling stream rushes between them; the summits are wild and broken; in some places overhanging the opposite sides, casting the darkness of night upon the narrow defile; then receding and forming an opening above, through which a strong ray of light is thrown down, and illuminates with the blaze of day the frightful chasm below. Wild fig-trees, oleanders, and ivy, were growing out of the rocky sides of the cliffs hundreds of feet above our heads; the eagle was screaming above us; all along were the open doors of tombs, forming the great Necropolis of the city; and at the extreme end was a large open space, with a powerful body of light thrown down upon it, and exhibiting in one full view the façade of a beautiful temple, hewn out of the rock, with rows of Corinthian columns and ornaments, standing out fresh and clear as if but yesterday from the hands of the sculptor. Though coming directly from the banks of the Nile, where the preservation of the temples excites the admiration and astonishment of every traveller, we were roused and excited by the extraordinary beauty and excellent condition of the great temple at Petra."

* * * * * * * *

"The whole temple, its columns, ornaments, porticoes, and porches, are cut out from and form part of the solid rock; and this rock, at the foot of which the temple stands like a mere print, towers several hundred feet above, its face cut smooth to the very summit, and the top remaining wild and

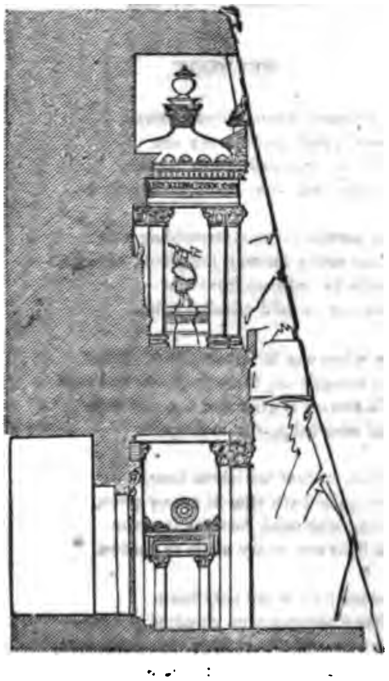


[Temple of Khasne—Petra.]

misshapen as Nature made it. The whole area before the temple is perhaps an acre in extent, enclosed on all sides except at the narrow entrance, and an opening to the left of the temple, which leads into the area of the city by a pass through perpendicular rocks, five or six hundred feet in height.

It is not my design to enter into the details of the many monuments in this extraordinary city; but, to give a general idea of the character of all the excavations, I cannot do better than go within the temple. Ascending several broad steps, we entered under a colonnade of four Corinthian columns, about thirty-five feet high, into a large chamber of some fifty feet square, and twenty-five feet high. The outside of the temple is richly ornamented, but the interiour is perfectly plain, there being no ornament of any kind upon the walls or ceiling; on each of the three sides is a small chamber for the reception of the dead; and on the back wall of the innermost chamber I saw the names of Messrs. Legh, Banks, Irby, and Mangles, the four English travellers who with so much difficulty had effected their entrance to the city; of Messieurs Laborde and Linant, and the two Englishmen and Italian of whom I have before spoken; and two or three others, which, from the character of the writing, I supposed to be the names of attendants upon some of these gentlemen.

These were the only names recorded in the temple; and, besides Burckhardt, no other traveller had ever reached it. I was the first American who had ever been there. Many of my countrymen, probably, as was the case with me, have never known the existence of such a city; and independently of all personal considerations, I confess that I felt what I trust was not an inexcusable pride, in writing upon the innermost wall of that temple the name of an American citizen; and under it, and flourishing on its own account in temples, and tombs, and all the most conspicuous places in Petra, is the illustrious name of Paulo Nuozzo, dragomano.



[Sectional View.]

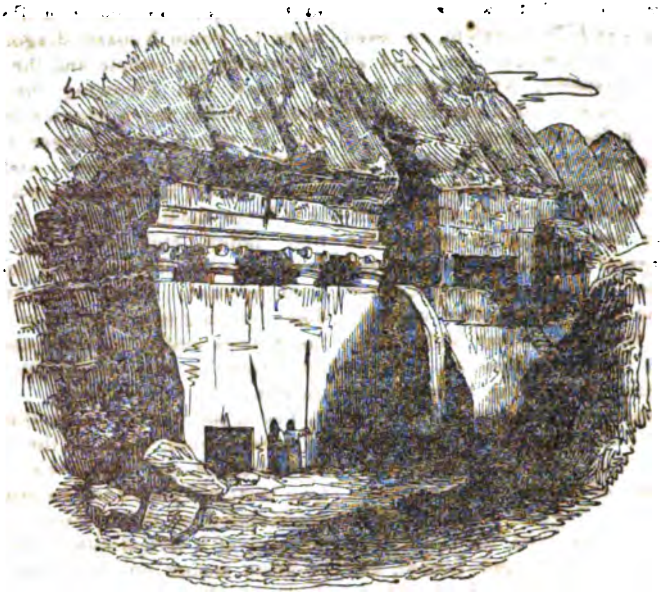
Leaving the temple and the open area on which it fronts, and following the stream, we entered another defile much broader than the first, on each side of which were ranges of tombs, with sculptured doors and columns; and on the left, in the bosom of the mountain, hewn out of the solid rock, is a large theatre, circular in form, the pillars in front fallen, and containing thirty-three rows of seats, capable of containing more than three thousand persons. Above the corridor was a range of doors opening to chambers in the rocks, the seats of the princes and wealthiest inhabitants of Petra, and not unlike a row of private boxes in a modern theatre.

The whole theatre is at this day in such a state of preservation, that if the tenants of the tombs around could once more rise into life, they might take their old places on its seats, and listen to the declamation of their favourite player. To me the stillness of a ruined city is nowhere so impressive as when sitting on the steps of its theatre; once thronged with the gay and pleasure-seeking, but now given up to solitude and desolation. Day after day these seats had been filled, and the now silent rocks had echoed to the applauding shouts of thousands: and little could an ancient Edomite imagine that a solitary stranger, from a then unknown world, would one day be wandering among the ruins of his proud and wonderful city, meditating upon the fate of a race that has for ages passed away."

* * * * * * * *

"All around the theatre in the sides of the mountains were ranges of tombs; and directly opposite they rose in long tiers one above another. Having looked into those around the theatre, I crossed to those opposite; and, carefully as the brief time I had would allow, examined the whole range. Though I had no small experience in exploring catacombs and tombs, these were so different from any I had seen, that I found it difficult to distinguish the habitations of the living from the chambers of the dead. The façades or architectural decorations of the front were everywhere handsome; and in this they differed materially from the tombs in Egypt; in the latter the doors were simply an opening in the rock, and all the grandeur and beauty of the work within; while here the door was always imposing in its appearance, and the interiour was generally a simple chamber, unpainted and unsculptured.

I say that I could not distinguish the dwellings from the tombs; but this was not invariably the case; some were clearly tombs, for there were pits in which the dead had been laid, and others were as clearly dwellings, being without a place for the deposite of the dead. One of these last particularly attracted my attention. It consisted of one large chamber, having on one side, at the foot of the wall, a stone bench about one foot high, and two or three broad, in form like the divans in the East at the present day; at the other end were several small apartments, hewn out of the rock, with partition-walls left between them, like stalls in a stable, and these had probably been the sleeping apartments of the different members of the family; the mysteries of bars and bolts, of folding-doors and third stories, being unknown in the days of the ancient Edom-



[View of an unfinished Tomb.]

ites. There were no paintings or decorations of any kind within the chamber; but the rock out of which it was hewn, like the whole stony rampart that encircled the city, was of a peculiarity and beauty that I never saw elsewhere, being a dark ground, with veins of white, blue, red, purple, and sometimes scarlet and light orange, running through it in rainbow streaks; and within the chambers, where there had been no exposure to the action of the elements, the freshness and beauty of the colours in which these waving lines were drawn, gave an effect hardly inferiour to that of the paintings in the tombs of the kings at Thebes. From its high and commanding position, and the unusual finish of the work, this house, if so it may be called, had no doubt been the residence of one who had strutted his hour of brief existence among the wealthy citizens of Petra. In front was a large table of rock, forming a sort of court for the excavated dwelling, where probably, year after year, in this beautiful climate, the Edomite of old sat under the gathering shades of evening, sometimes looking down upon the congregated thousands and the stirring scenes in the theatre beneath, or beyond upon the palaces and dwellings in the area of the then populous city.

Farther on, in the same range, though, in consequence of the steps of the streets being broken, we were obliged to go down and ascend again before we could reach it, was another temple, like the first, cut out of the solid rock, and, like the first too, having for its principal ornament a large urn, shattered and bruised by musket-balls; for the ignorant Arab, believing that gold is concealed in it, day after day, as he passes by, levels at it his murderous gun, in the vain hope to break the vessel and scatter a golden shower on the ground.

But it would be unprofitable to dwell upon details. In the exceeding interest of the scene around me, I hurried from place to place, utterly insensible to physical fatigue; and being entirely alone, and having a full and undisturbed range of the ruins, I clambered up broken staircases and among the ruins of streets; and, looking into one excavation, passed on to another and another, and made the whole circle of the desolate city. There, on the spot, everything had an interest which I cannot give in description; and if the reader has followed me so far, I have too much regard for him to drag him about after me as I did Paul. I am warned of the consequences by what occurred with that excellent and patient follower; for before the day was over he was completely worn out with fatigue."

RELIGION.

THE mariner, when tempest-driven,
  Upon a dark and stormy sea,
Lifts up his troubled eye to heaven,
  In hope that there some guide may be.

And if perchance some trembling star
  Shine softly through the gloom of night,
He hails its radiance from afar—
  Blessing its mild celestial light.

Thus when o'er life's tumultuous surge
  We struggle on, through gloom and care,
While storms of grief and anguish urge
  Our troubled spirits to despair:

Oh then, in that benighted hour,
  One guide hath GOD in mercy given,
Shining with mild, benignant power,
  To light our weary souls to heaven.

RELIGION!—'t is thy holy beam
  That dissipates each cloud of gloom—
Brightens and cheers life's troubled dream,
  And sheds a halo round the tomb.

Knickerbocker.

ANIMAL MAGNETISM.

This fanciful science appears to have originated with Mesmer and other German illuminés, who believed that the power of a common magnet might be made to act on the human frame. They also believed that this power once imparted to a professor might afterward be communicated to others without the agency of ferruginous bodies. So much of interest has lately been excited by the attempts to revive the long-exploded doctrines of animal magnetism that it may be advisable to present our readers with a brief outline of its history, and the phenomena said to be elicited. The principal means used to produce the effects of animal magnetism are such as touching and stroking with the hands, breathing on a person, fixing the eyes upon him, &c.; the magnetized person must always be of a weaker constitution, and, if possible, of a different sex, from the magnetizer; and it is indispensable that he should be of a disposition to believe without doubting. The phenomena themselves consist partly in bodily sensations (for instance, chillness, heaviness, flying pains, oppressions, &c.,) partly in a diminished activity of the external senses, partly in fainting, convulsions, sleep, with lively dreams, in which the magnetized person is transported to higher spheres, observes the internal organization of his own body, prophesies, gives medical prescriptions, receives inspired views of heaven, hell, purgatory, &c., reads sealed letters laid on his stomach, and, when awakened, is totally unconscious of what he has experienced. At the same time, the soul becomes so elevated and refined that the magnetized individual has an instinctive perception of the presence of the impure, and falls into fits at the approach of disbelievers in animal magnetism, and of all who investigate it by the rules of ordinary reason. Hence it is necessary to keep skepticks at a distance, when it is desired to witness the highest phenomena.

The magnetized person shows a remarkable connexion with, and dependance on, the magnetizer, tasting what he eats, smelling what he holds before his nose, and no one else can bring him back from the magnetick state. In the sequel we shall give a brief exposition of the phenomena, as stated by Kluge, who appears, in his *Attempt at an Exhibition of Animal Magnetism,* to have given the fullest account of them. A scientifick investigation of the influence which we are considering is hardly consistent with the views entertained of it by its adherents; for they maintain that mere reason cannot approach nor conceive this great mystery; it can be rightly apprehended only by a believer. The whole of the effects of animal magnetism seem to be ascribable to a heated imagination, to an excitement, half spiritual, half sensual, and to a morbid sensitiveness. The history of animal magnetism may be thus briefly detailed:—Anthony Mesmer, in 1772, attempted cures with the mineral magnet, and excited some sensation in Vienna, but at length declared that not the magnet, but a mysterious power in his own person caused the effects ascribed to the magnet, and that this power was related not only to the magnetick power, but to the attraction dispersed throughout the universe. But, a fraud which he attempted (the pretended restoration of sight to a girl) having been discovered, he proceeded, in 1778, to Paris. The great supporters of animal magnetism have recently been Kieser in Jena, and Wolfart in Berlin; the former explains the phenomena by the striking difference between life by day and life by night, both in the case of animals and vegetables; the latter adopts the mystical jargon of Mesmer. In 1820, the Prussian government caused a prize to be offered for the best treatise on this subject, but it was subsequently withdrawn.

We now proceed to an outline of the phenomena of animal magnetism, as described in Mr. Kluge's work. The phenomena, in the case of the magnetizer and the magnetized, are as follows:—

1. *The Magnetizer.*—He is generally capable of producing a positive effect only so far as he possesses a higher degree of energy and vital power than the person magnetized. The man generally effects more than the woman. If the magnetizer is the weaker person, there either takes place no apparent effect, or the effects are inverted, viz. the positive effects are apparent in him, and the negative in the person magnetized. If the magnetizer undertakes the manipulation of a susceptible subject, he always feels a glow, and the sensation of a gentle flow from his palm, and particularly from the points of his fingers. If he covers his hands with silk gloves, or other electrick bodies, he has not this latter feeling, and his operation is fruitless; but linen or leather gloves do not prevent the effect. After a successful operation, the magnetizer feels a general unpleasantness, a weakness in the digestive system, and, in general, a loss of power, in proportion to the susceptibility of the magnetized subject, and the duration or frequency of the operation. If the magnetizer, during the operation, is isolated with the magnetized subject by electrical bodies, his loss of power is less, but the effects which he produces are stronger.

2. *Phenomena in the person magnetized.*—The phenomena produced in the subject by a positive operation are of a double kind; either they have reference to the general state of the body, are then not periodical, but last during the whole cure, and therefore may be considered as the general effects of magnetism; or they have reference only to particular activities of the organization. Of the former sort are, 1, a general awakening and strengthening of the vital powers in all parts of the body, without considerable excitement, as well in the systems of the nerves and muscles, the vascular and digestive system, as the organs of secretion; 2, a mild excitement over the whole surface of the body, by which every irregularity and local reaction is neutralized and the equilibrium restored; 3, a withdrawing of the heightened vital power from the suffering organs to others; 4, a diminution or total suppression of the excitement producing the morbid activity of the nerves. The magnetizer not only should have a stronger body than the person magnetized, but also a perfectly healthy one. He must have attained the maturity of his bodily powers, but must still be within the age of active life; the mind, too, must be sound and strong, in order to master the affections and passions, to have a living faith and a firm will, and thus to attain perfect control over this means of cure, as also over the patient.

The phenomena of animal magnetism have been divided into six degrees. Those of the first degree are generally the following: first, the feeling of a strong current from the head to the extremities, after which a higher degree of heat follows, easily observable by the thermometer, greater redness of the skin, with increased perspiration, and a feeling of ease and comfort throughout the whole body. In the second degree, the warmth increases, and appears to the patient to diffuse itself from the stomach, as if from a central point, over the whole body. The pulse becomes generally fuller and stronger, and the breathing easier and deeper. The patient feels a heaviness in the eyelids and an irresistible desire to close them. If he does close them, they seem to him cemented by the strongest power, and, during the remainder of the magnetick effects, it is impossible for him to open them. All the other senses, however, remain active, and their activity is often heightened. The patient knows therefore everything which is done about him, though he is not always capable of speaking. At the close of the magnetick operation, he opens his eyes by himself, or with the assistance of the magnetizer, and feels generally strengthened and well. After this, the patient observes, sometimes, a shining appearance before his eyes, similar to repeated lightning, a pricking in the points of the fingers and toes alternately, a heaviness and coldness in the extremities, unpleasant feelings about the region of the stomach, sickness, violent shuddering, wish to cough, &c.

The particular signs often accompanying the third degree are, especially, swoons, convulsive tremblings, real convulsions, cataleptick and even apoplectick fits. This state generally begins with all the signs of an approaching drowsiness. Repeated yawning, stretching, heaviness of the eyelids, announce it. A deep sigh generally follows, after which the eyes close entirely, and a state begins similar to sleep, in which the patient seems to be deprived of all sensation and consciousness. In the fourth degree, the patient awakens, not from his sleep, but within himself, and regains his consciousness; he knows himself again, yet in a changed relation to surrounding circumstances. The external senses are either closed entirely, or their character is changed, and only the internal sense remains the same. The *somnambulist* (as he is called in this state,) entirely awakened within himself, distinguishes with his eyes nothing but light and darkness, and not always even these, although, as is sometimes the case, the eyelids are open. The ball of the eye is either drawn up convulsively or stiff, the pupil widened and without sensation. Next, the sense of feeling is metamorphosed into that of seeing, so that the somnambulist can distinguish by it, not only the outlines of things, but also colours, with perfect precision. The region of the stomach becomes the central point of all sensation, and it is chiefly through this region that the sense of sight is supplied. The somnambulist, therefore, can ascertain the time perfectly well by a watch, closely held to the pit of the stomach. By repeated exercise, the patient obtains this faculty in a higher degree, and what originally appeared to him indistinct becomes very clear. Persons appear to him more distinct than inanimate subjects.

Hearing is likewise performed in this state by the pit of the stomach, and the sense of smell becomes sometimes so acute as to distinguish the different ingredients of compound scents. Objects which the person does not regard in a healthy and natural state have often,very sensible and even dangerous effects on him when in a state of somnambulism. The vicinity of a living being, whom the patient perceives at a distance of from ten to fifteen paces, is generally very disagreeable to him. If persons whom he dislikes touch him, paleness and coldness occur in the parts touched, and convulsions are generally the consequence. Among inanimate subjects, metals have the most unpleasant effect. To the magnet the somnambulist is still more sensitive than toward other metals. Of everything which has occurred to the patient during this period, what he has perceived, thought, said, or done, he has, when awaking, either no recollection or a very faint one; but, if he is brought again into this state, he recollects everything very well.

In the fifth degree, the patient attains, by his heightened consciousness and the increased strength of his general feelings, to that internal self-contemplation by which he is able to investigate even the minutest parts of his bodily structure. By virtue of this accurate knowledge of his internal frame, the *clairvoyant*, as he is called in this state, not only determines very distinctly the seat and quality of his disease, but at the same time an instinct developes itself in him which makes him understand the means necessary for his cure. Besides mentioning the remedies, the *clairvoyant* also indicates the kind of magnetizing necessary, and thus directs his own cure. This deep insight is not limited to the *clairvoyant* alone, but extends to persons brought into magnetick relations with him, whose sensations are always communicated to him. Between the magnetizer and the *clairvoyant* this sympathy is the strongest and most remarkable. Very often the feeling of disease in the magnetizer is not only communicated to the patient, but the disease itself, which in some cases has continued after the patient was awakened. Affections of the soul also pass from the magnetizer to the *clairvoyant*. Sometimes this sympathy reaches such a height that it remains even when the parties are distant from each other. This magnetick sympathy may be still more heightened, and then the *clairvoyant* has a clear insight into the internal physical state of persons in a magnetick connexion with him, just as he has of his own; can determine their disease, its course and future phenomena, and prescribe the means of cure accordingly. He insists that he perceives the diseased state of others precisely as his own, by the stomach. His language becomes more elevated than ordinary, and is marked by fire, spirit, and precision. His perception is livelier and stronger, his thinking freer and deeper, and his judgment quicker and more penetrating. He not only perceives the present, and the influence of external relations, much more distinctly than before, but penetrates also into the most distant period of past time.

There is an obvious inclination of patients for each other, if they are treated by the same magnetizer, and particularly if they are in a state of somnambulism at the same time. The patient who has attained internal clearness by the fifth degree penetrates, in the sixth degree, the darkness of external things, and attains a higher view of the whole of nature. With uncommon clearness he often distinguishes the secrets of the past, what is distant and unknown in the present, and the events of coming time. If the patient is asked how he knows all this, he generally answers that it is as if he were told of it by some other person, or that he feels it through the pit of the stomach. He is always fully convinced of the truth of what he thus acquires. In respect to the choice of proper remedies, the *clairvoyant* is less limited than before. In the former degree, it was necessary to put him into connexion with another person, by intermediate bodies; but, in this degree, he can be in this relation with any distant person, if he knows him, or feels a lively interest for him, or even if the magnetizer, or any other person brought into connexion with the *clairvoyant* by actual touch, knows the distant person, and thinks intently of him. The view of the *clairvoyant* extends even into the future condition of others. He attains to a higher, fuller life than he had before. The body seems to be intimately amalgamated with the mind, to be blended into the most harmonious union with it. The individual is removed from everything coarse and sensual, and placed in a state of serene and elevated self-contemplation. The feeling of the greatest bodily comfort and purity of soul produces a serene peace within him, which indicates itself by the noblest feelings. In this state, which, according to the *clairvoyants*, borders on heavenly felicity, they are incapable of impurity, and even the guilty fancy themselves virtuous.

Such are the wonders of animal magnetism, of which our readers may believe much or little. The attention which the subject has attracted in Europe is our excuse for the length of this article. The footing which it has gained, and the effects which it has produced, strikingly exemplify the power of imagination. It would require too much space to describe all the various manipulations and other operations by which the patient is placed in the magnetick state.

METEOROLOGICAL SKETCHES:

BY AN OBSERVER.

(Continued from page 114.)

OF DESERTS.

The atmosphere is capable of absorbing aqueous vapor in proportion to its temperature, and as a current of air in passing from a colder to a warmer region necessarily increases in temperature, it thus acquires an increasing capacity for moisture, which tends to prevent the formation of clouds and rain. This condition pertains not only to currents which descend from high mountains and sweep over elevated plains, but is peculiar to a certain section or portion of the great natural circuits of wind which are found in various regions, on both sides of the equator. The necessary consequence, is a scarcity of rain in this portion of the aerial current, or in those places where the winds from the temperate or extra-
tropical latitudes are found blowing towar
tor, either uniformly, or for regular and d
periods. We perceive here the principa
those arid deserts, comprising almost eve
of geological formation, which occupy s
space in the otherwise most fruitful latitud

On examining the map of the world, i
seen that this absence of rain is found
countries lying between the 18th and 32
of latitude, and situated upon the eastern s
great oceans or of the great circuits of wi
are found to prevail in the temperate and l
tudes. On the western shores of the A
North and South America, where the aeria
is passing from the equator towards the hi
tudes, we find on the other hand that there
quate supplies of rain. The same is gene
of the western shores and islands of th
ocean; and the *westerly* monsoons being of
ter character, generally afford copious rai
the easterly monsoons, or regular tradewind
incline towards the equator, are equally re
for their dryness, at least within the latitud
mentioned.

In the atmospheric basin of the North
we have the most striking exhibition of this
the great African desert of Sahara. Contin
survey eastwardly under the same parallels,
also the great deserts of Lybia, Egypt, and
which for the most part are subject to th
course of general winds; the blighting ef
which, fully, exemplify the position which
assumed. In the atmospheric basin of the
Atlantic, we find also, in South Africa, an a
gion, extending across the same parallels of l
where a southerly wind is found to prevail,
in its progress towards the equator, becomes
in the southeast tradewinds. The same effe
produced on the eastern shores of the Pacific
where, upon the coasts of Chili, Bolivia, and
we have a like section of the general winds,
notwithstanding the near proximity of the
causes the desert of Atacama, and a remarkab
sence of rain on other parts of the same coast.
same general effect is produced by the corre
ing winds which prevail upon the western c
North America, where, owing to the peculiar
tion of the sea-coast and mountain ranges, th
influence is extended, as in some parts of As
into the temperate latitudes. The phenomena a
ing the general winds in the basin of the
ocean, and New Holland, are of the same cha
It seems to follow, that the general sterility, o
odical drought of the regions referred to, is no
ascribed to the peculiar constitution or comp
of the natural surface, or to excessive heat, bu
be attributed to the peculiar course and hygro
condition of the general winds.

OF THE VARIATIONS OF THE BAROMETER.

The fluctuations in the height of the mer
column, have long excited attention, and the
mate causes of these changes are deemed, b
European writers, to be as yet unknown.
fluctuations of the barometer appear to differ in
character and origin, and may be classed unde
following heads:—

I. *The regular semi-diurnal oscillation wh* *the tropical latitudes is at its maximum from* 9 *to* 10 *A. M., and at its minimum about* 3 *P. M.* In the temperate latitudes, the effect appears to be nearly the same; but Professor Forbes has shown that in very high latitudes the effect is reversed, the minimum being at 10, and the maximum at 3 o'clock. This oscillation appears to indicate a system of atmospheric tides, resulting from the rotation of the earth and its relations to the solar system.

II. *The more striking and irregular variations which attend the presence and passage of storms of wind, especially in the higher latitudes.* This class of fluctuations is believed to admit of an easy and satisfactory explanation.

It appears from a careful examination of the phenomena of hurricanes and storms, as they occur in various regions, that the greatest depression of the barometer is found within the body of the storm—that this depression constantly accompanies the storm during its progress from one region to another, notwithstanding the tendency of the air to move from all sides towards the point of least pressure—and that the wind in these storms is found to blow in a lateral or circuitous direction, around the point of greatest depression, which is near the geographical centre of the storm. Now when these facts are considered, it becomes evident that the centrifugal action of the air in this powerful rotative movement, effectually opposes the gravitating tendency towards the point of least pressure, and thus maintains, mechanically, the constant rarefaction which causes the depression of the mercury under the storm. Were it possible to produce a movement of the wind from all sides of a storm, in the direction of its centre, the depression of the barometer would at once be terminated, and an accumulated pressure would immediately take place.

A demonstrative proof of our position is also found in the barometrical depression which is so constantly exhibited in the permanent atmospheric eddy at Cape Horn and the strait of Magalhaens, which is caused by the westerly winds that press upon the Cape and are disgorged into the Southern ocean around the southern termination of the Andes. Capt. P. P. King, who surveyed this region and who was furnished with the best instruments, adjusted to the standard of the Royal observatory, informs us that the mean height of the barometer was about 29.50 inches; and a register of the observations for seven months from February to August, inclusive, at the observatory at Port Famine, in the strait, shows a mean of 29.43 inches. This result is confirmed by the observations of other officers; and may serve, also, to show the error of Mr. Daniell's position, that the mean pressure of the atmosphere during the year, at the level of the sea, is every where the same.

III. *The constant or periodical accumulation of atmospheric pressure, which arises from natural obstacles, opposed to the course of the general or trade-winds; and the corresponding depression of the barometer, which results from the retardation of such winds by like obstacles or by an unnatural and forced route, in their progress towards the point of observation.*

The most remarkable variations of this character are found under the eastern and western monsoons, in Asia and the Indian and Pacific oceans. The N. E. monsoon or regular tradewind, obstructed in its natural course of deflection from the tropical to the temperate latitudes, by the great Asiatic elevations, is forced to continue a sluggish course across the equator, into the N. W. monsoon. The effect of this resistance in raising the barometer is such, that at Canton, in China, the mean height of the barometer during four months of the N. E. monsoon, for a period of seven years, has been found to be 30.20 inches. The mean height during four months of the S. W. monsoon, owing probably to the tardy passage of the S. E. trade from which it is derived, in its unnatural course across the equator, being, for the same period, only 29.86 inches.

IV. *The oscillation of an extensive region of atmosphere in the higher or temperate latitudes, causing a rise of the barometer of some days or even weeks' continuance; and a corresponding depression for like periods at other seasons.* These extensive oscillations may, perhaps, be referred to the alternately predominating influence of gravitation toward the poles, and the counter force of the centrifugal action of the earth's rotation towards the equator, aided probably, by some of the other causes to which allusion has been made.

Although storms of wind, from the manner of their development, usually produce rain in some portion of the area which they occupy, yet the fall of the barometer, being chiefly dependant on mechanical causes, has no necessary connexion with the fall of rain. It appears from the observations of the Marquis Poleni, that in one thousand one hundred and seventy-five instances of the fall of rain, the barometer sunk only seven hundred and fifty-eight times, being six hundred and forty-five to one thousand. In the United States the most copious rains not unfrequently occur during an unusual elevation of the barometer.

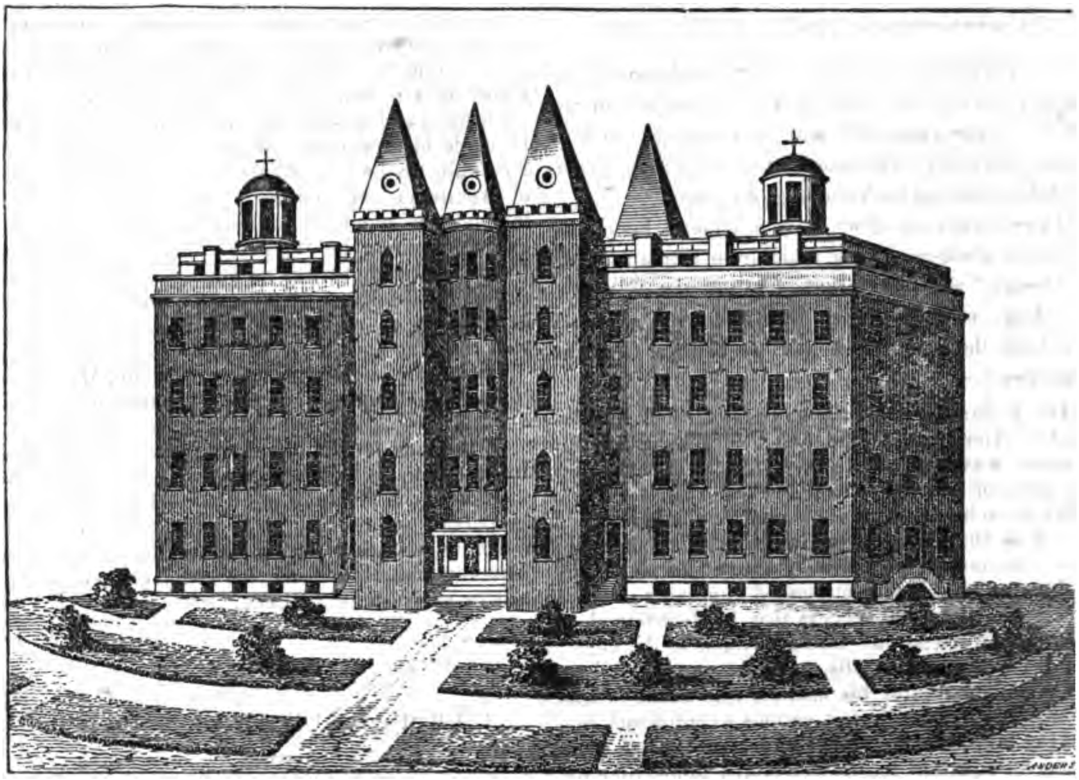
VIEWS OF AN ANCIENT WRITER.

"*The wind goeth toward the south, and turneth about unto the north: it whirleth about continually and the wind returneth again according to his circuits. All the rivers run into the sea; yet the sea is not full; unto the place from whence the rivers come, thither they return again.*"

This concise epitome of meteorology may be considered as one of the most comprehensive and accurate that has ever been written. R.

DISPOSAL OF THE DEAD.

In ancient times, the people of the East had several methods of disposing of their dead friends. They sometimes deposited the body in a subterranean sepulchre, built with brick, stones, and mortar, and having niches in the sides, wherein the kindred corpses had each a place;—or they enclosed the body in an urn or vase;—or they laid it in a coffin, and the coffin in a grave, as we do;—or they washed it in pure water, clothed it in a perfumed garment, and then burnt it on a funeral pile, carefully collecting the ashes and whitened bones for burial:—or, after washing the lifeless form, and arraying it in a perfumed garment, as before, they immersed it in a vessel of aquafortis; and when it was entirely dissolved, they carried the liquid to some solitary spot, and poured it on the earth. This latter method of performing the sepulchral rites was deemed the best of all



[Washington Medical College, Baltimore, Md.]

WASHINGTON MEDICAL COLLEGE.

"The College buildings are constructed in a style of architecture which will vie with the proudest collegiate edifices. They are situated on the southeast corner of Market and Hampstead Hill streets, on the most elevated ground within the limits of Baltimore, and command a magnificent view of the Patapsco, of the city and the surrounding country. The buildings will range one hundred and ninety-five feet on Hampstead Hill st., and consist in part of a circular centre building, forty feet in diameter, having four stories at unequal height, for the convenience of Lecture halls, Laboratory, Dissecting rooms, Museum, Library. This part of the edifice is flanked at four corresponding equi-distant points by turrets, six stories high, castellated with obelisk roofs, and decorated with Gothick windows and doors. The two wings (the eastern already finished and occupied) are each sixty feet by forty, being five stories in height. The apartments are numerous, spacious and lofty, affording ample room for a classification of the patients, and, when completed, will contain between three and four hundred beds. The apartments appropriated to house students will accommodate forty or fifty individuals, and are most agreeable and inviting to young gentlemen who may prefer to reside in the College edifice. There are also apartments specially designed for strangers who may be taken ill in our city, and who prefer being retired from the noise and confusion of a hotel. and wish a place where good nurses, medical attendance, every convenience contributing to their comfort be provided. It is believed that this peculiar f ture will render this Institution very popular w strangers who may take apartments here, and w can have the attendance of any physician they pre and will be free to receive their friends and visit as unrestrained as in their own homes. No inf tious diseases are admitted within the wards of t hospital."

FACULTY.

James H. Miller, M. D., Professor of Anato and Physiology.

Samuel K. Jennings, M. D., Professor of Mat Medica, Therapeuticks, and Legal Medicine.

Wm. W. Handy, M. D., Professor of Obstetri and Diseases of Women and Children.

John C. S. Monker, M. D., Professor of Instit and Practice of Medicine.

Edward Foreman, M. D., Professor of Chymis

John R. W. Dunbar, M. D., Professor of Surg and Surgical Anatomy.

Washington R. Handy, M. D., Demonstrato Anatomy.

OFFICERS OF THE COLLEGE.

James H Miller, *President.*
John C. S. Monkur, *Treasurer.*
Edward Foreman, *Secretary.*
Samuel K. Jennings, *Dean.*

WOOD ENGRAVING.

ITS INTRODUCTION INTO THE UNITED STATES.

We purpose giving some account of the invention, history, and introduction into this country, of the different arts connected with *book-making*; such as wood-engraving, type-founding, stereotyping, paper-making, printing, book-binding, &c., &c.

In our last number we gave a general history of the art of wood-engraving, taken from Dunlap's "Arts of Design," and there credited to the pen of A. Mason, Esq., of New York. The following sketches are from the same work, and we believe, from the same pen:—

Dr. Anderson, who may be justly termed the Bewick of America, and the father of the art in this country, was born in April, 1775, three days after the battle of Lexington, near Peck slip in New York. After his school days were passed, his father placed him with Dr. Young to study the practice of medicine; but he had from infancy devoted his play hours to drawing, and having attempted engraving, he was so fascinated by his success that he determined, as soon as he could, to "throw physick to the dogs," and become professionally an engraver. He did so.

Dr. Anderson, (for his medical title sticks to him to this hour,) after trying various experiments, and making himself somewhat proficient in the art, gained an introduction to the celebrated John Roberts, and was received by him as a pupil. He worked as long as he could with Roberts, for the purpose of improving himself in drawing, and working with the graver, but the irregularity of the eccentrick Scotchman, and his intemperance, forced him to give up the advantages he might have derived from his instruction.

In the year 1794, as a professed engraver, Dr. Anderson was engaged by Wm. Durell, bookseller, and one of our early publishers, to engrave cuts for an edition of "The Lookingglass," the original engravings for which were cut by Bewick on wood. This led to the employment which distinguishes Anderson as our first engraver on that material. He worked through half the book on type-metal and copper, and then commenced his essays on wood without other instruction than that derived from studying Bewick's cuts, which he was to copy. For this new art he had to invent and make tools. Perseverance, industry, and ingenuity overcame all difficulties, and he established himself as an engraver in wood. Soon after his first attempts, he cut a cameo for Swords' edition of Darwin.

He persevered in the practice, and exhibited the highest ability, though for many years he received but little encouragement; but like his great English contemporary, being an enthusiast in the art, he kept steadily and perseveringly on his course, and has the similar satisfaction of having witnessed the progress of wood engraving to its present state of general adoption. It is highly gratifying to know that this amiable and talented veteran is still in full practice, and in the enjoyment of excellent health.

Wm. Mason, was one of our early engravers on wood. He was apprenticed to Abner Reid, copper-plate engraver, of Hartford, Conn.; who at the same time, painted signs, and occasionally executed a wood cut, in what his apprentice calls "the old type-metal style." The beautiful effects produced on mood by Dr. Anderson, of New York, excited the admiration and ambition of Mr. Mason; and in 1808 he made his first essays in wood engraving on ornaments for toy-books. Want of proper tools and want of experience impeded his efforts, and stimulated his ingenuity to supply deficiencies in both. His success determined him to persist in wood engraving. Learning that there was no engraver on wood in the city of Philadelphia, he proceeded thither as soon as he was out of his apprenticeship, (1810) and was well received and amply employed.

During the last war with Great Britain, Mr. Mason entered into other employments, and relinquished his wood engraving to his pupil, Mr. George Gilbert.

Of the introduction of wood engraving into Boston the credit is due to Mr. Abel Bowen, who began the practice of the art there in 1812, and has continued the pursuit successfully; he has had several pupils of ability, who now that the art is becoming more generally understood, receive every encouragement in their professional practice.

FARMERS' DEPARTMENT.

MANURES.

Marl forms a very valuable manure, if it be of a proper kind for the land to which it is applied. It is of three kinds—viz. calcareous, argillaceous, and sandy. Calcareous marl consists of from thirty-three to eighty parts of chalk, or calcareous earth, and from sixty-seven to twenty parts of clay in the hundred. It is generally of a yellowish white, or yellowish brown, but in some places it is of a brown or reddish cast. That which contains shells is most valued and is called shell-marl. It effervesces with acids; when pulverized it feels dry between the fingers, and if immersed in water it readily crumbles to pieces, but does not form a viscid mass. It is commonly discovered a few feet beneath the surface of the soil, and on the sides of hills, or the banks of rivers flowing through calcareous countries.

Argillaceous marl contains from sixty-eight to eighty parts in the hundred of clay, and from thirty-two to twenty of chalk. It is of a gray, bluish brown, or reddish brown colour. It is harder and more unctuous than the last species, and if exposed to the air or moisture it does not moulder so quickly. It effervesces with the mineral acids, but not with vinegar. Silicious or sandy marl contains a greater proportion of sand than of chalk or clay. It is of a brownish gray or lead-colour, and is in general friable and flaky, though it sometimes occurs in hard lumps. Heavy clay soils are most benefited by calcareous marl; the sandy, gravelly, and light loamy soils by argillaceous marl; silicious marl may be applied to the same kind of soil as the calcareous, where the calcareous cannot be obtained.

Much of the utility of marling depends upon the marl being intimately combined with the soil. This dressing should therefore be given in summer, when the marl is light, dry, and easily crumbled, and the marl suffered to lie on the surface during the ensuing winter, as the alteration of frost and rain will tend to complete its pulverization.

The farmers in Staffordshire, England, reckon the soft blue marl, which is most commonly found under clay, or low black ground, at the depth of seven or eight feet, the best for arable land, and the gray sort the best for pasture. That which is of a brownish colour, with blue veins in it, and little lumps of chalk or limestone, generally lying under stiff clays, and very hard to dig, is most esteemed in Cheshire. The marl which is usually found at the depth of about two feet, or a yard, on the sides of hills, and in wet boggy grounds which have a light sand in them, is very fat and close, and reckoned the strongest of all marls, for which reason it is particularly good for sandy lands. This is commonly called peat-marl, or delving-marl. The paper-marl, as it is sometimes called, frequently lies near coals, and flakes like leaves or pieces of brown paper, than which it is of a somewhat lighter colour. That which some writers call clay-marl, because it looks like clay, is very fat, and sometimes mixed with chalk-stones. Steel-marl breaks of itself into square cubical bits. These two last kinds generally lie under sand or clay, sometimes about a yard deep under the former, but often much deeper under the latter.

Stone, slate, or flag marl, which is a kind of soft stone or rather slate, of a bluish colour, is generally allowed to be the best. It easily dissolves with frost or rain, is found near rivers and on the sides of hills, and is a very lasting manure.

In many parts of most counties in England marl discovers itself to the most negligent eye, particularly on the sides of broken hills, or deep hollow roads. Many rivers are bordered with a vast treasure, which is plundered by every flood. Boggy lands frequently cover it; and, in them, it seldom lies above three feet deep. It is somewhat lower under stiff clays, and marshy level grounds. The lowest parts of most sandy lands abound with it, sometimes at the depth of three feet, and sometimes at seven, nine, or more.

Nothing is more common than to find the ditches which enclose a field dug so deep that they have penetrated six or seven inches into a bed of marl, without the farmer's taking any notice of it, though the extraordinary shooting and increase of the grass which is put forth by the marl thrown up on the sides of the bank might discover it to the most inexperienced eye. Where the marl is thus accidentally disclosed, it not only turfs the sides and tops of the banks, and thereby secures them against all injuries of the weather, but makes the grass grow so long and thick that, when beaten down by winds, it hangs as if it thatched the earth which nourished it, and carries off the rain, without letting any great quantity penetrate through it.

Marl is very common in Ireland, where it seldom lies above a foot or two below the surface of the soil, luckily for that country, which is extremely boggy. But in France, though they have marl in many places, they are often obliged to dig for it very deep, particularly in the province of Artois, where it generally lies eighty or ninety feet beneath the surface. On account of the great depth of the marl-
pits there, extraordinary care is taken to
in, to prevent the fatal accidents which mig
wise happen.

In marling, it is particularly necessary tc
true proportion which the land requires, ar
to err in laying on too little than too much,
more may be added at pleasure; whereas,
doing it, the first year's crop often fails, bec
body of the marl has not been sufficiently
and, in that case, it will sometimes be two
years before the ground comes to a proper
The best directions that can be given to th
in the application of this manure to light s
lay on the quantity which will give the d
cohesion wanted in those soils. A gen
cannot be laid down in this respect, bec
quantity of marl requisite to effect the des
must be different, in proportion to the d
lightness of the soil.

Pliny speaks of marl as a species of imp
known to the Greeks, but more peculiar t
and Gaul. He calls it the fat of the earth,
pares it to the glands in the human body.
manure, so far as we can find, was not u
probably not to be found, in Italy, it shows
tentive the Romans were to agriculture,
they carried their victorious arms; since,
standing the continual alarms they lived in
natives here and in Gaul, they found time
cover and perfect a means of improving lan
ularly suited to the soil and climate, an
others, the cheapest and most lasting.

Gypsum, or the stone from which plaster
is prepared, has been used with great adva
this country. In the United States it is ext
used with the greatest success. It is grou
mill and sifted, and is then scattered on the
the proportion of eight or nine bushels to
at any season of the year. It accelerates th
faction of vegetable and animal matter, and
adapted to increase the crops of grass,
and clover.

Clay greatly improves a sandy loose soil,
greater the proportion of silex in the sand
advantageous it will be. In estimating the
of it, the durable nature of the change it
must be attended to; a good claying wil
ficient for almost half a century. The usu
tity laid on is from ten to twelve loads per

Burnt clay, reduced to powder, has the
properties of clay itself, and improves co
stiff clayey soils.

For clayey soils, moorish tracts, and stif
sand forms a useful dressing. Sea-sand is t
the clays and loams will often take from fort
loads per acre; but moor-land will require
three times that quantity.

Coal-ashes form a useful manure for land
description requiring burnt clay. They m
wise be employed as a top dressing for cl
dry, chalky lands, over which they ought to
tered in the months of March and April, in
portion of from fifty to sixty bushels per acre.
may also be applied in like manner to gras
Soot remarkably increases the produce
abounding with vegetable matter; it prev
growth of moss; and from its warmth make
cellent addition to cold, moist, and clayey

and pastures. The quantity used varies from fifteen to twenty-five and even forty bushels per acre. It should be strewed on the land in calm weather during winter, so that the subsequent rains may wash it into the soil, as in spring the heat it would produce might be a check upon vegetation. It is frequently employed as a top dressing for grain and grass, and has been found extremely useful in destroying the wire-worm and other insects which do great injury to grain.

It is sometimes a condition in leases that no more soot shall be used on the farm than is produced upon it; and, as a reason for this, an opinion has prevailed that soot, though it greatly increases the quantity of produce during the first year after its application, yet it exhausts the land, which is afterward in a worse condition than if it had not been employed. The conditions of leases are often irrational and injurious both to farmer and land-owner: it deserves inquiry whether this is well founded.

Saline manures in general combine readily with other substances, and produce decompositions which are extremely useful in agriculture; but it is more necessary than with other kinds of manure to guard against using them in excess, particularly when they contain a powerful acid principle, as in the first substance mentioned below. Manures of this kind are chiefly useful when the soil contains much vegetable or animal matter.

Salt, as a manure, is singularly beneficial, if used in small quantity. The fattening of cattle upon salt-marshes has been practised time out of mind, and it is to the salt contained in those lands that a very considerable part of the effect must be attributed. Salt is of great use for raising turnips, and also for corn, of which it causes the straw to be strong, and the grain thin-hulled and heavy. It sweetens bad pastures; improves and increases the herbage; while it destroys noxious insects. The quantity of salt which has been recommended is from twelve to sixteen bushels per acre; but on the authority of a gentleman, who had made through a course of years a great number of experiments on the use of salt as a manure, and who communicated the result of them to the late Mr. Parkes, the ingenious author of the *Chymical Catechism*, one bushel per acre is all that can be used with safety: a greater quantity would render the land steril for two or three years afterward. This is consonant with the fact that a small quantity of salt hastens putrefaction, while a large quantity effectually prevents it; for the salt does not act so much by its being imbibed by the plant, as by its property of attracting moisture from the atmosphere, promoting the decomposition of other substances, and causing them to afford the nutriment required.

Lickorice.—The common lickorice grows wild in the south of Europe, and is cultivated in many places, even in this country, for the sake of the root, which is much used in pharmacy, and forms a considerable article of commerce. More than two hundred tuns of the extract are manufactured annually in Spain, a considerable portion of which is sent to London. It is often administered medicinally, in coughs and pulmonary affections, and the aqueous infusion is a refreshing beverage. A deep, light, and sandy soil is best adapted to its culture.

LITERARY REVIEW.

The National Portrait Gallery of Distinguished Americans. Conducted by James Herring, *New York, and* James B. Longacre, *Philadelphia.* New York, vols. 1, 2, and 3. Imperial octavo: with engraved portraits.

The accessions constantly made to the Biographical department of American Knowledge, may justly be pronounced among the important contributions which enrich and adorn the literary career of our countrymen at the present day. The firmest supporters of sound instruction seem to be deeply alive to the value of the subject: viewing it in its several relationships, as calculated, in an effective manner, to convey the prominent facts and circumstances, which enable the student of our colonial and revolutionary history the better to comprehend the origin and progress of our Republick, in its career of empire, and in its march toward intellectual greatness and renown. Aware, moreover, that the annals of legislation, philosophy, and of the arts, the expositions of the leading and vital truths which grace and magnify theology and the other liberal professions, may severally be embraced in Biographical memoirs, and be discussed in the most attractive and intelligible manner, to the plainest understanding; the strongest inducements are unquestionably held out, to encourage the best pens and the most competent intellects to augment, by this means, the stores of this essential branch of human investigation. Besides which, in selecting for contemplation and improvement the characters of those chiefs of the human family, who, by their genius and talents, have rendered themselves illustrious, and placed their country under lasting obligations by their services in her behalf, we cherish the most ennobling feelings our nature is susceptible of, and awaken a curiosity in the best of causes, greater than is enjoyed perhaps by any other literary department. We accordingly within the past twenty years, have been favoured with several works on General Biography, appropriated as becoming memorials of the lives of native Americans, besides no inconsiderable number of distinct volumes confined to individual characters of acknowledged excellence and approved services: among the former class of biographies we may fairly mention the productions of Allen, Rogers, and Knapp: Dr. Elliott's New England Biography is of an earlier date. Among the latter the more commanding volumes of Marshall's Washington, Johnson's life of General Greene, Tudor's life of Otis, President Quincy's life of his father, Colden's account of Robert Fulton, Sparks's life of the intrepid traveller Ledyard, the life of Richard Henry Lee, of Virginia, by his grandson, Hosack's Memoirs of De Witt Clinton, Dwight's ample volume on President Edwards, Davis's life of Col. Burr, Tucker's life of Jefferson, &c., &c. To these also deserve to be added the copious work by Sanderson and others, containing the memoirs of the signers of the Declaration of Independence; and the Library of American Biography, now publishing at Boston by Jared Sparks, a performance which challenges our approbation equally by the choice of its subjects as by the able, impartial, and authentick manner in which the memoirs are drawn up. Many other works of a biographical character, but of an earlier date might here also be enumerated, were we disposed to summon the attention of the reading publick to the acquisition of a minute acquaintance with American patriots and philosophers, who in their day and generation displayed the attributes of greatness, and whose lives were a blessing to their country.

Of auto-biographies we have several; but one of merit, surpassing all others of its kind, the popular and universally read account of the self-taught Franklin. If our information be correct, no book of any age or in any language is more generally perused either by the youth of America or of Europe; and few have contributed to render the study of biography more captivating than the simple memoir of that most exalted patriot and rational man. With these cursory observations on a portion at least of our present stock of works of this nature, we hasten to offer a few observations on the publication placed at the head of this critical notice.

The first number of the National Portrait Gallery of Distinguished Americans was recognised as a specimen of a work of great consideration, demanding for the faithful accomplishment of the undertaking talents of a high order, fortified by varied and extensive knowledge; and the appropriation of pecuniary resources to no ordinary amount. The benefactors of our land present themselves to philosophical contemplation, vested with such diversity of merits according as they may have advanced the glory of the nation on the broad theatre of publick affairs, or, in an equally laudatory way have promoted some important object of human pursuit, that, in order successfully to discharge the office of personal historian with proper discrimination, it becomes an imperative task, to delineate with fidelity and with a master hand the distinctive features of those whose panegyrick we are invited to pronounce: to seize with accuracy those prominent traits of individuality which properly mark their respective characters; and, while their talents and example are objects of a nation's plaudits, that the writer, moreover, discharge his elevated trust equally free of all hyperbole and conceit on the one hand, and that tame, cold, and apathick exposition which betrays ever thing but a proper concurrence of feelings in beha of the special subject of his memoir. In a wor like that now before us minuteness of detail an copiousness of illustration are not to be expected numbers claim consideration, and the difficulty assigning the proportion which each ought to bea to the whole is perhaps the most embarrassing ci cumstance which the biographer is compelled t yield to. But notwithstanding the difficulty of a occasionally too brief notice and at other times a disproportionate space when compared with th nature of the materials which the various writers these memoirs had at command, their legitimat province will nevertheless be found to have bee fairly adhered to, when we assert, that a sound comprehension of the subject, the exercise of a sobe judgement, and a clear record of relevant facts communicated in language easy, perspicuous, and matured by good sense, constitute the prominent excellences of by far the greater number of the article of this Portrait Gallery. This may be deemed hig praise in behalf of a work of so multifarious a nature and the production of so many pens: a carefu perusal of its pages has however led to this conviction of the merits of this arduous undertaking and if perchance the exact admeasurement of th intellectual worth and acts of every individual no recorded may be deemed to be here and there no so fully preserved, the more solid excellence o entire freedom from all sectarian and anti-patrioticl prepossessions recommend these notices to th hearty approbation of every advocate of politica freedom and religious toleration. Nor is the narrative in these pages encumbered by useless disquisition or infested by recitals to pamper a perverte or depraved curiosity. In every sketch, facts for the groundwork of illustration, and the authenticit of the materials bear the strongest proofs, that no inconsiderable effort has been made to obtain them and to present the respective subjects to the world that he who reads, may have the best of motives t emulate the examples set before him.

As coming within the scope of our intentions w shall briefly advert to the articles which aggregatel make up the present volumes. The first volume i very properly introduced to notice with an accoun of him who in the memorable language of Congres was "first in war, first in peace, and first in th hearts of his countrymen," the venerated *Washington:* this sketch is properly more ample than an other of the biographical notices in the Gallery: it i a fit memorial of the chieftain of the revolutionary contest and the founder of the American republick: nor is the second memoir —the life of th general's wife, Mrs. *Martha Washington*, without th praise of being an excellent and felicitous accompaniment to the first article. The incidents in the account are of an uncommonly interesting nature and the domestick qualities, the eminent piety, and the serene death of this exalted female, are given in terms such as cannot fail to create a lasting impression on the reader. We extract the closing paragraph:

> "Our filial task is done. Few females have ever figured in the great drama of life, amid scenes so varied and imposing, with so few faults and so many virtues as the subject of this brief memoir. Identified with the father of his country in the great events which led to the establishment of a nation's independence, Mrs. Washington necessarily partook much of his thoughts, his councils, and his views. Often at his side in that awful period that 'tried men's souls,' her cheerfulness soothed his anxieties, her firmness inspired confidence, while her devotional piety toward the Supreme Being enabled her to discern a ray of hope, amid the darkness of a horizon clouded by despair. After a long life abounding in vicissitudes, having a full measure of sorrows but with many and high enjoyments, the venerable *Martha Washington* descended to the grave, cheered by the prospect of a blessed immortality and mourned by the millions of a mighty empire."

The memoir of *Charles Carrol* of Carrolton, the last survivor of that heroick band who pledged their all to the glorious cause of their country's independence, is beautifully drawn up, and exhibits that chivalrick character, and disinterested patriot, in faithful and captivating colours: it is further enriched with many historical facts of interest. We have next in succession *Nathaniel Greene*, the great captain of the Revolution: numerous as are the biographical records, concerning this extraordinary soldier, none will find his ardour abated or his patriotism diminished by the perusal of this brief but spirited sketch. The purity and integrity of Greene, his native energy and genius in the art of war, his lion-heartedness and unsurpassed judgement, are fit topicks for the sublimest contemplation of American youth, who seek to study the proudest events in their country's annals. The gallant *Wayne*, whose attack on Stony Point is so well known, and whose Indian warfare was characterized by daring enterprise, as well as by humanity, has here received the due tribute of grateful patriotism: nor can less be said of the account of General *Moultrie*, who, to services to his country by the sword, still further augmented our estimate of his publick acts, by contributing toward the history of the United States two volumes of Memoirs of the American Revolution, relating principally to events which occured in South Carolina, and derived from facts within his own knowledge. As authentick records they will be appreciated as of indubitable authority. Col. Humphries's attractive life of *Israel Putnam* has long rendered the character of this intrepid individual familiar with our juvenile associations and placed his qualities as a soldier and patriot in a commanding view. The narrative in these pages is calculated to renew our best feelings in behalf of his undaunted bravery and his almost marvellous adventures so familiar to our school-boy days. It is among the anomalies of our times, that he, of whom the British soldiery proverbially said, that *he dared to lead, where any dared to follow*, should, in a late history purporting to be sober, have had his heroism aspersed with the charge of cowardice: the record here given is the more gratifying on this account, and sets at nought such aspersion. A novel and interesting circumstance touching the generous bearing of Putnam, at the battle of Bunker's Hill, is inserted in this memoir, derived from a communication of the venerable Col. John Trumbull.

The life of *Timothy Pickering*, of Massachusetts, and of the late Governour *Shelby* of Kentucky, are full of interest and much novel information: and the subject of the next memoir, "one of the small band of ancient worthies, who having devoted the prime of life, to the service of their country, yet still live to witness and enjoy its prosperity and happiness," Col. *Aaron Ogden* of New Jersey, has on the present occasion furnished, on his own responsibility, as a witness of some very important scenes in the Revolutionary war, an account of events varying essentially from those which have heretofore been generally received. The biography is valuable, but our limits prevent enlargement. What can a few pages do in embracing the life of the late Chief Justice of the United States, *John Marshall*, the founder and expositor of our constitutional law. The record of this great man, and exalted judge, is nevertheless, comparatively of some extent, and so admirably drawn up as to furnish a satisfactory account of his stupendous labours in the several departments of his publick career: his revolutionary, his legislative, his ministerial, and his judicial services, are each noticed: the writer of this sketch possesses a proper estimate of his subject, and has been able to portray the moral, intellectual and professional greatness of this purest of men, and first of lawyers. The life of Washington by Judge Marshall is pronounced as characterized "by fidelity, accuracy, impartiality, dignity of narrative, and simplicity and purity of style." The composition of this article is in a style of much force, and unusual animation. The short memoir of the late *Judge Shippen* of Pennsylvania, will be read with pleasure by the surviving admirers of that dignified worthy. We wish it were more ample. Every citizen who fully appreciates the great value of our United States Military school at West Point will be satisfied with the story given of the late Col. *Jonathan Williams*, whose services were of such vast importance in the early building up of that National Institution, and popular feeling will dwell with satisfaction on the character here portrayed of the late patriotick governour of New York, *Daniel D. Tompkins*. *Henry Clay*, *Andrew Jackson*, and *Daniel Webster*; these three distinguished magnates, who have so often and so vehemently been arrayed against each other by the zeal of their political friends, are here grouped in harmless juxtaposition, and their merits appropriately discriminated; the lofty patriotism, the indomitable spirit, and the profound thought, which suggest themselves to the American mind on the mention of these names, cannot but awaken the spirit of emulation in youth, and the pride of patriotism in all. Who has not been charmed with the letters of the British Spy? Who has not lamented over the early fate of its amiable and gifted author, *William Wirt*, rescued from poverty and errour by friendly exhortation and by the force of native talents and persevering application asserting his title to the highest distinction in the gift of his country: the life is worthy of perusal. Prominent occurrences in our naval and military annals are associated with the names of *Lewis Cass*, *Thomas McDonough*, and *Alexander McComb:* and furnish materials for profitable reading. *Joel Poinsett* merited and has received a conspicuous place among our men of pursuits at once political and scientifick, as also *Stoddard S. Johnson*, the eloquent senator of Louisiana whose career was but recently arrested by the criminal carelessness of our steamboat navigation on the southern waters. Of *Edward Livingston* of New York, distinguished as a lawyer, as an orator, as a diplomatist, and a codifier of criminal jurisprudence, the notice is laudatory, and extensive, but not more than what is just. Death has recently summoned him from among us after a life of active and prolonged utility. *Lewis M'Lean* born in 1786 consequently belongs to a post-revolutionary period; in him we recognise the able head of the treasury department; and the efficient secretary of state. The adherents of the Episcopal form of Church government equally as those of the Calvinistick model in ecclesiastical polity, will attest the impartiality of the publishers of the National Gallery by the appearance in the same volume of extensive and instructive notices of Bishop *White*, and *Timothy Dwight*, the former the father of the Episcopal Church, the latter the author of the standard work on Calvinistick Theology; both memoirs contain authoritative materials for the ecclesiastical historian. The life of *Joel Barlow*, better known to his countrymen by his stern republican principles than by his Columbiad, is followed by a most interesting memoir of Col. *John Trumbull*, the revolutionary patriot, who has blended himself with the history of his country, and the able artist, to whose pencil this national work is largely indebted for th originals of many of its finest illustrations. The lif of another artist, to whom we are indebted for th most accredited portrait of Washington, *Gilbe Charles Stuart* follows: it is full of captivating incidents. The medical profession will find a commemorative summary of the acts and services of D *Samuel L. Mitchill*, long prominent in the annals o science, and of Dr. *Theodric Romeyne Beck*, distinguished by his Elements of Medical Jurisprudence The volume closes with *Washington Irving*, *Catherine M. Sedgwick*, and *James Fenimore Cooper*, writers who have successfully vindicated the genius o their country, in works of fiction, and their claims t its approbation by the purity of their lives: the biography of Irving is among the most happy specimen of composition: of the life of Mr. Cooper, we ca only complain of its brevity.

The mechanical execution of this work, both i typography, and in engravings, is equally honourabl to the state of the arts in America and the zealou munificence of the enterprising publishers. W shall reserve space in a subsequent number for another notice of this National work.

INTERESTING TO SCULPTORS.

It is stated in the National Intelligencer, that Mr Featherstonaugh, United States geologist, has ascertained the existence of some important deposites o white statuary marble, in the Cherokee country He has followed an obscure ridge in the mountain six miles, consisting entirely of that valuable substance, hitherto only seen in the United States, in thin beds, not exceeding a few inches. He report one of these deposites as equal to that of Mass Carrara in Italy, with which he is familiar. Marbl of this kind has been hitherto brought, at a grea expense, from Italy. The block for the statue o Hamilton, destroyed by fire in the Exchange, if w mistake not, was represented to have cost not les than two thousand dollars.

Col. Sherburne of Washington city, who ha been for some weeks past in the Cherokee nation on business for government, has, we have been informed, contracted with the owner for the purchas of the land on which this valuable and beautifu marble was discovered by the celebrated geologis above named. It is thought to be inexhaustible an more valuable than any gold mine yet discovered in the Cherokee nation, being of that cast as not only to command a good price, but will be in very grea demand. The quarry is within seven miles of navigable water, and there is a never-failing strea within one hundred yards, that will carry one thousand saws if found necessary.

OREGON.

[Cincinnatti Chronicle.]

It is known to our readers, that the jurisdiction of the United States extends over the Rocky mountains to the Pacifick ocean: but it is not so well known what are the natural features of the country. In the Missionary Herald for October, we find a very graphick and interesting account, by Mr. Spaulding (a missionary) of a journey from Missouri to Columbia river, and of the region west of the Rocky mountains. And here, we would remark, that the Missionary Herald acts as a journal of geographical discovery; for, as it contains the latest and most accurate accounts from all the countries of the globe, some of which have been before unvisited, but, now travelled and closely observed by the missionaries of Christianity. It is a most valuable work of travels, from which all classes of people may derive instruction and amusement from the habits and manners of different nations.

The territory of the United States on the Pacifick extends from about latitude 42° to latitude 49°, about four hundred miles of coast. Within this space empties the Columbia river, nearly all of which lies within the jurisdiction of the United States. This stream is about fifteen hundred miles in length, having its head in the Rocky mountains. On its banks the Hudson bay Company have several ports, and the British are now the sole occupants. If the people of the United States are so anxious to occupy Texas, which is not their own, why do they not occupy the mouth of Columbia, and its vicinity, which is their own? The inducements are really greater, though the journey is more difficult to make.

The following extracts will shew the route travelled by the missionaries, and the climate, and resources of the country around the mouth of the Columbia river:—

"The communication from which the following extracts are taken was written soon after Mr. Spaulding and his associates, including Mrs. S. Doctor and Mrs. Whitman, and W. H. Gray, left the frontiers of the state of Missouri about the first of May, 1836, in company with a company of gentlemen engaged in the fur-trade. Their route, as did that of Mr. Parker the preceding year, generally lay near the Missouri river, till they reached the Platte, thence along that river to its fork, and thence along the north fork, by the Black hills, to near its source, thence to Green river, one of the head branches of the western Colorado, thence to the waters of Bear river, which empties itself into the great Salt lake, and thence to the head waters of Louis's river, the southern branch of the Columbia, on which, or on the streams which run into it, they pursued their course to fort Wallawalla, one of the principal trading ports of the Hudson's bay Company, about three hundred miles from the Pacifick ocean.

"The mission family took with them a small wagon, which, however, they left behind them when they had accomplished about half their journey. They preferred to travel on horseback, and nearly the whole distance of more than two thousand miles was passed in that manner. As the country is not inhabited, except by wandering bands of Indians, when the supplies of provisions with which he started shall be exhausted, the traveller must depend for the means of subsistence on the game which may be taken as he proceeds. Of course he must confine himself almost entirely to animal food, while he will find that to be scarce and of a bad quality. Mrs. Spaulding and Mrs. Whitman are believed to be the first white women who have crossed the Rocky mountains. But though subjected to many hardships and privations, and some perils, the health of the whole party was decidedly improved by the journey.

"Mentioning the inconvenience experienced from the want of bread and vegetable food, Mr. Spaulding remarks:—

"'Our friends must think of us sitting on the burning sand with a cup of tea in one hand, and a piece of dry, mouldy, and sour buffalo meat in the other, and this for our breakfast, dinner, and supper, for days and weeks together. As we drew near Wallawalla, we heard of its beautiful cattle, its hogs, and other fruits of civilized life; and be assured, the anticipation of once more getting into my hand a potato or crust of bread, was nowise favourable to my sleep at night. But on reaching this desirable haven of rest, we were so suddenly transported from our former wild mode of living to that of civilized life, and so kindly treated by Mr. P., clerk of the Hudson's bay Company, in charge of this establishment, that we were made almost to forget what we had been going through for days, and weeks, and months past. It seemed like a dream. And even now I cannot realize that I have spent the last spring and summer in passing the Rocky mountains; and that I am really through the journey, and that my eyes now actually behold the waters of the beautiful Columbia.

"'It was of the highest importance before we took a single step to have an interview with the chief factor of the company on the Columbia in charge at fort Vancouver, for the purpose of presenting our letters from the United States Secretary of War, learning his feelings respecting our object to this country, and the prospect of supplies. Mr. P. very kindly offered to fit up a boat and take us down. You may very naturally suppose, that our ladies were not much fatigued at the end of their journey, and that travelling had become almost second nature to us, from the fact, that, arriving at the fort Saturday in the forenoon, in the afternoon we set about preparing for a trip of three hundred miles down the terrible Columbia to this place. We left Wallawalla the sixth of September, in a boat propelled by six oarsmen. The usual time for a passage down is five days. We were detained by head winds, and did not arrive till the twelfth. Here we were again met with the warmest expressions of friendship by Dr. M'Laughlin, who conducted us immediately to his house. After a brief interview he conducted us to his gardens, and, be assured, we were not a little surprised to see, west of the Rocky mountains, where we expected to meet scarcely the first buddings of civilization, such perfection in horticulture. About five acres are laid out in order, and stored with almost every species of vegetables, fruits, and flowers; and among them, figs, citrons, oranges, lemons, pomegranates, cotton-plants, and all common fruits found in the United States. Every thing produces well. For some days our time was divided between visits on the farm, to the mills, herds, the dairy, the stores, the ships in the port, the school, &c. It of course gave us great satisfaction to witness these fruits of civilization which we supposed our eyes had looked upon for the last time when we passed the frontier line of our own land. Dr. M'Laughlin's farm is the largest on the Columbia river, and produced last year, four thousand five hundred bushels of wheat, four thousand bushels of peas, one thousand seven hundred bushels of barley, one thousand five hundred bushels of oats; potatoes not gathered, corn but little. His horned cattle are seven hundred and fifty, swine four hundred, with from two to three hundred horses. He has also a saw-mill and a flour-mill.'

"Mr. Spaulding mentions, that nearly all the chief factors, traders, and clerks, at Vancouver, are members either of the Episcopal or Presbyterian church, and that a chaplain of the former church had just arrived from London. All appeared decidedly favourable to missionary efforts. The labouring men are principally French Catholicks from Canada."

Our readers will observe, that the place which is thus described as producing figs, oranges, lemons, and cotton-plants, is near north latitude 45°; the latitudes of Michigan and Maine, the coldest and most barren portions of the United States. What makes the difference? One is on the eastern, and the other on the western coast of the United States. The same difference exists between the whole eastern coast of the United States, and the shores of Europe. France, Spain, and Italy, which produce the olive, the orange, and the vine so exuberantly, are in the latitude of the northern part of the United States, where the climate is very different. One is on the eastern and the other on the western shore of the ocean.

But our readers need not suppose, that because it is so delightful at the mouth of the Columbia, the same features prevail in the intermediate country. Just the reverse is the fact. From the forks of the Platte river to within three hundred miles of the Pacifick, a distance of one thousand two hundred miles, a barren, sandy, rocky Zahara intervenes, with scarcely water and grass enough to supply the traveller at night. The Snake, and Lewis rivers run through sand-plains, in groves cut through the solid rock from one hundred to five hundred feet deep. Unless this desert is interrupted by fertile lands on the head waters of the Yellow Stone, it will effectually stop the progress of the states west.

The following great natural curiosities are not the least which exist in our country.

BASALTICK ROCKS AND NATURAL SODA-FOUNTAIN.

"The geological structure of the earth, except a tract of beautiful granite, through which we travelled for a few days near the Black hills, and one or two specimens on Snake river, is one and the same, viz. basaltick. It would seem that the entire Rocky mountains, extending even to the Pacifick ocean, have been thrown up from the bowels of the earth by internal fires. The country of the Columbia river, especially, is a beautiful specimen. The bluffs on either side rise to the height of one hundred to one thousand two hundred feet, in benches of perfect flutes, closely piled, all perpendicular, with the exception of two small piles which I observed in passing from Wallawalla to this place—one horizontal, the other oblique. For o day, while passing the Blue mountains, t from Wallawalla, we were upon cut stone, broken by some natural agency, and resembl much continued heaps of such broken sto prepared for covering roads in the states day's travel injured the feet of our anima than the whole journey besides. In fact, w but little difficulty till we reached these mo Most of our animals made the whole journey being shod. We drove a wagon to Snake f could have driven it through, but for the fatigu animals. We expect to get it at some future

"The whole face of the country, from Fo liam, at the foot of the Black hills, till within seven days travel of Wallawalla, is covere the mountain-sedge, a species of wormwood, fibrous stalk of the size of a man's wrist, and three to four feet high, having a dead appea No creature, I believe, eats this bitter herb, compelled by hunger. This sedge was som struction to the wagon, though but little to the horses.

"Three days before we reached Fort Hall passed what seems to me one of the greatest cu ities in the world—a natural soda-fountain o known extent, having several openings. On them is about fifteen feet in diameter, with no covered bottom. About twelve feet below the face are two large globes, on either side of opening, from which the effervescence seem rise. However, a stone cast in, after a few minu throws the whole fountain into a violent agitat Another of the openings, about four inches in di eter, is through an elevated rock, from which water spouts at intervals of about forty secon The water is, in all its properties, equal to any a ficial fountain, and is constantly foaming and spa ling. Those who visit this fountain drink la quantities of the water, with good effect to heal Perhaps in the days when a railroad connects t waters of the Columbia with those of the Missou this fountain may be a source of great gain to t company that shall accomplish such a noble wor if they are beforehand in securing it. For I a sure, if visitors can come from the far East to se the Niagara falls, they would not value a few day more to visit the West, and see the great soda fountain of the Rocky mountains.

"Within a few days' ride of Salmon falls, w passed three grand shoots of water, where smal rivers rushed from the perpendicular bluff, and fell from a height of about five hundred feet from the surface of the earth, and three hundred from the surface of the river, from the lofty banks of which they fall.

"Four days before reaching Snake fort, we passed three hot springs; I also saw several afterward. The water was at a boiling heat. Fish were boiled sufficiently in them in twenty minutes.

"The last thing I will mention under this head is Grand Round—so called from its appearance. It is a beautiful, rich, circular plain, probably twenty miles in diameter, surrounded on all sides by mountains, covered with beautiful pine and spruce. A considerable river passes through the middle, skirted with timber. This is in the Chingoos country, and is a favourable place for a mission.

Face of the Country.—We left Snake Fort on the twenty-second of August, and arrived at Fort Wallawalla on the third of September. Wallawalla is on the south side of Columbia river, nine miles below the mouth of Snake or Lewis river, and at the junction of Wallawalla and Columbia rivers. It was built by the Hudson's Bay Company fifteen years ago. No timber except floodwood is found within twenty-five miles. The soil is good in small spots on the Wallawalla river. All kinds of grains and vegetables produce well. Cattle surpass in fatness any thing I ever saw in the United States. Horses are as plenty and about as cheap as in our country—beautiful, and usually milk-white or cream colour. All animals feed out through winter as there is but little snow. The grass is of a superiour quality, called the Buffalo grass—a fine, short, bunch grass, covering the whole face of the earth. This grass is one among the thousand marks of the goodness of God in providing for all climates and sections of the earth. It might naturally be supposed—there being no rain or dew in this country for six or seven months in the year—every thing would be parched by the sun, and there would be no means of subsistence for animals; but this grass remains through the season quite fresh, retaining all its virtue, and forms very hearty food for winter. As soon as we came to it, about six days before arriving at Wallawalla, our animals would leave the green grass on the streams, and seek this on the sand-hills and plains.

"*Great American Desert.*—With regard to the country through which we passed, nothing probably could have set me right but actual observation, so different is the reality from what I had previously imagined. The fact that the vast interiour of North America is a barren desert, is not, so far as I am aware, very extensively known in the United States. On the twenty-second of June we entered the Rocky mountains, and came out of them on the first of September. Till we reached the forks of the Platte, we found some timber and considerable fertile soil on the water-courses, though both diminished to that point. From that place, excepting a little spot at Fort William, Fort Hall, Snake Fort, Grand Round, Wallawalla, till we come within a hundred miles of this fort, (Vancouver,) the whole country is a barren desert, with only here and there a little patch of grass and willows planted, it would seem, by the hands of a kind Providence, just often enough for stops at noon and night, reminding one of the great Sahara of Africa. In the morning we would mount our horses and ride hour after hour through plains of burning sand or over mountains of rocks, till about midday; and when ourselves and animals had become thirsty and hungry and tired, we would come suddenly upon a cool spring or stream of water, with a few acres of excellent grass for our horses, (excepting the route from Fort William to Rendezvous, where they suffered much,) and a little cluster of willows for fuel. So we would travel in afternoon till we came upon a similarly favored spot, about the hour when we wished to encamp for the night.

"A few days we were compelled to travel all day, some twenty or thirty miles, to find water and grass. The region of the Snake or Lewis river, especially, is the most barren of our whole route. We camped but a few times on the river, and always found a limited supply of grass and willows. Except these few spots, we could not discover a green thing upon its borders, from Fort Hall, where we struck it, to Snake Fort, where we left it, there is nothing but a vast plain of burning sand, with here and there a mountain of burnt rocks. Our route lay generally some miles from the river, where we found food and water as above mentioned. The river passes through a channel of cut rocks, from one hundred to five hundred feet deep, with frequent rapids, and four or five considerable falls. It is not navigable on account of the rapidity. So far from being a country of game, except the buffalo country, it is a country of comparatively no game. Since leaving Fort Hall we have travelled days, and I do not know but I can safely say weeks, without seeing a living creature except a few crows in the air, and herds of black crickets upon the ground. We saw but two bears in the whole route. However I learn that in the mountains, deer, antelope, elk, and bear, can be found to some extent, even in the most destitute parts of the country. The rivers abound in fish. The Columbia and its branches teem with salmon, three or four months in the year, during which time two or three hundred barrels are salted at Fort Vancouver. A little care during the salmon season, and all the settlers of the Columbia may supply themselves with salt salmon for the year. The salmon find their way into the mountains, up the several tributaries of the Columbia. We found them plenty at Salmon Falls, ten days below Fort Hall, perhaps a thousand miles from the ocean. They continue to beat their way up the rivers and small streams till their strength is exhausted, and they float lifeless upon the shore. Not one of the countless herds that enter the mouth of the Columbia, every season, ever return. They are mostly dead by the first of October. The Columbia also abounds in sturgeon and seal."

CANAL LOCKS.

When a canal changes from one level to another of different elevation, the place where the change of level takes place is commanded by a lock. Locks are tight oblong enclosures, in the bed of the canal, furnished with gates at each end, which separate the higher from the lower parts of the canal. When a boat passes up the canal, the lower gates are opened, and the boat glides into the lock, after which the lower gates are shut. A sluice, communicating with the upper part of the canal, is then opened, and the lock rapidly fills with water, elevating the boat on its surface. When the lock is filled to the highest water level, the upper gates are opened, and the boat, being now on the level of the upper part of the canal, passes on its way. A process the reverse of this is performed when the boat is descending the canal. Locks are made of stone or brick, sometimes of wood. The gates are commonly double, resembling folding doors. They meet each other, in most instances, at an obtuse angle, and the pressure of the water serves to keep them firmly in contact. Cast iron gates are sometimes used curved in the form of a horizontal arch, with their convex side opposed to the water. In China, inclined planes are said to be used instead of locks, along which the boats are drawn up or let down.

REVOLUTIONARY ANECDOTES.

BARON STEUBEN.

"In the society of ladies, the baron appeared to be very happy; engaged in their amusements, and added by his wit and pleasantry to the delights of the evening. His sternness and stentorian voice was only seen and heard in the field. 'Oh!' said an old man, who had been a captain in the war, and then kept a publick house, near Utica; 'oh! baron, how glad I am to see you in my house, but I used to be dreadfully afraid of you!'—'How so, captain?'—'You halloed, and swore, and looked so dreadfully at me, once when my platoon was out of its place, that I almost melted into water!'—'Oh, fie done, fie, captain;'—'It was bad, to be sure,' said the old man, 'but you did hallo tremendously!' It is true, he was rough as the ocean in a storm, when great faults in discipline were committed; but if in the whirlwind of his passion, he had injured any one, the redress was ample.

"I recollect at a review at Morristown, a Lieutenant Gibbons, a brave and good officer, was arrested on the spot, and ordered in the rear, for a fault which it appeared another had committed. At a proper moment, the commander of the regiment came forward, and informed the baron of Mr. Gibbons's innocence, and worth, and of his acute feelings under this unmerited disgrace. 'Desire Lieutenant Gibbons,' said the baron, 'to come in front of the troops.' 'Sir' said he to him, 'the fault which was committed by throwing the line into confusion, might in the presence of an enemy, have been fatal; and I arrested you. Your colonel has informed me, that you are in this instance blameless. I ask your pardon; return to your command, I would not do injustice to any one, much less, to one whose character is so respectable.' All this was said with his hat off, and the rain pouring on his reverend head! Was there an officer who saw this, unmoved with feelings of respect and affection? Not one, who had the feelings of a soldier.

"The baron, though never perfectly master of our language, made very few mistakes in speaking, except designedly, for pleasantry or for wit. I remember, that, dining at headquarters at New Windsor, New York, Mrs. Washington asked him what amusements he had, now that peace was certain, and the business of his profession less pressing. 'I read and play chess, my lady,' said the baron, 'and yesterday I was invited to go *a-fishing*. It was understood to be a very fine amusement. I believe I sat in the boat two hours; it was very warm but I caught two fish.'—'Of what kind, baron?' 'Indeed, my lady, I do not recollect perfectly, but one of them was a whale.' 'A whale! baron, in the North river!' 'Yes, upon my word, a very fine whale, as that gentleman informed me; did you not tell me? was it not a whale, major?' 'An eel, baron.' 'I beg your pardon, my lady; I am very much mistaken if that gentleman did not call it a whale, but it is of little consequence, I shall abandon the trade not
ing the fine amusement it affords.'

"On another occasion, in the house of t
able Mrs. Livingston, mother of the late c
where virtue and talents, and modest m
ways met welcome, the baron was introd
Miss Sheaffe, an amiable and interesting y
sister of the present British General Sh
am very happy,' said he, 'in the honour
you, madamoiselle, at whatever risk, thou
from my youth, been cautioned to guard mys
mis-chief; but I never before thought her
were so powerful.'*

"The adroitness, and above all the sil
which manœuvres were performed, in the
of the baron, was remarked with astonishm
officers of the French army. The Marq
de Montmorency, a brigadier-general, said
on, 'I admire the celerity and exactitude
your men perform; but what I cannot c
the profound silence with which they m
'I don't know, Mons. le Marquis, from w
noise should come,' answered the baron, '
my brigadiers dare not open the mouth, bu
the order!' 'Ah! hah! Mons. le Baron
ted the Marquis, for he was perhaps the no
in the French Army; '*je vous compren*
comprend!'

"The baron, after the defeat of Gates i
was engaged in raising a regiment in Vir
sufficient to form a regiment had with diffi
collected; the corps was paraded, and on
of marching to Carolina. A good lookin
horseback, with his servant as it appeared
mounted, rode up, and introducing himself t
informed him he had brought a recruit.
you, sir,' said the baron, 'with all my hea
arrived in a happy moment. Where is he
for the man was a colonel in the militia.
ordering his boy to dismount. The baro
nance altered; a sergeant was ordered
the lad, whose shoes when off, discovered
by which his height had been increased.
patted the child's head, with a hand trem
rage, and asked him how old he was? H
young, quite a child; 'Sir,' said the bar
to him who brought him, 'you think me
'Oh, no baron, I don't'. 'Then, sir, I thi
one, an infamous scoundrel, thus to attem
your country! Take off this fellow's spurs,
in the ranks, and tell General Green fro
onel Gaskins, that I have sent him a m
serve, instead of an infant, whom he w
basely made his substitute. Go, my boy
colonel's horses and spurs to his wife; m
spects to her, and tell her that her husban
to fight, as an honest citizen should, for th
his country. By platoons! to the right w
ward march!'"

* The beauty of this pun, it will be perceived, c
much in the baron's having imparted to it the f
making Miss Sheaffe and *mischief* similar in soun

LITERARY NOTICES.

The TOKEN, *and* ATLANTICK SOUVENIR; Boston, American Stationers' Company—New York, S. Colman.

The Token may justly be regarded the *chef d'œuvre* of American Annuals; it was, we believe, the *first* in the field in point of time—has never *suspended*—was always the best—and always improving.

The one before us is rich in its illustrations and literary contributions, and as a work of *art* it is entitled to the consideration of a liberal publick. We have long been convinced that our artists *can* produce illustrations for the Annuals, that will not suffer by comparison with any in the world, and in support of our opinion we need only to refer to some of the plates in the Token of this year.

The *gem* of the volume, is undoubtedly, "The Fairies'First Visit to America," designed by Chapman, and engraved by Smeillie. It is one of the most exquisite productions of fancy we have ever seen, and the beautiful manner in which the engraver has executed the delicate imaginings of the design, merits the highest praise. But the gentlemen who contributed the poetical illustrations, have evidently not understood the design.

"*Chingford Church*," drawn by Brown, and engraved by Smeillie, is one of the most beautiful landscapes we have ever seen, and is by many considered the *gem* of the volume. Mr. Smeillie is probably second to no engraver in the world, in his landscapes. The "*presentation plate*," drawn by Chapman, and engraved *on wood* by Adams, [don't shake your head so doubtingly at us, reader, when we tell you it *is* engraved on wood,] shows to what a state of perfection the genius of Adams has brought his art. The "*Expected Canoe*," drawn by Chapman, engraved by Andrews & Jewett, and used as a frontispiece, is a beautiful plate; but in our judgement it should change places with "*The Token*," which, evidently intended by the artist as the frontispiece, has crept into the middle of the book. The design of "the token" plate is both poetical and appropriate, but the engraver has, in some points, made a failure. We have seen better work from Mr. Andrews, than any of his this year's plates.

The poetical illustration, by E. Sargeant, jr., is so beautiful, we cannot resist the temptation of giving it at length:—

"Brave son of a Chieftain! beloved Cherokee!
This token of wampum is woven for thee;
A token to flitter and shine on thy breast—
My bravest and brightest, my wisest and best!

"Tis woven with coral, with beads, and with shells;
It shall be on thy breast the most potent of spells,
To save thee from ambush, to shield thee from harm,
To quicken thy sight, and give strength to thine arm.

"Rejoicer in battle! what forest or stream
Sees thy heron-plume wave, and thy tomahawk gleam?
Does the Father of Waters sweep on thy sharp prow?
Sure thridder of dark woods! Oh, where art thou now?

"Dost hunt the fierce bison, or shoot the fleet deer?
O'er the prairie's wide level dost bend thy career?
Or, worn with the heat and the toil of the chase,
Does the mist of the cataract moisten thy face?"

While thus spake the maiden, an eagle, who beat
The clouds with his pinions, fell dead at her feet!
And the arrow, which reached him, while mounting so free,
Was sped from the bow of the young Cherokee.

ı "*Martha Washington*," we recognise immediately the bu- of Cheney, who in figures has no superiour.

Among the literary contributions are articles from Miss Sedgwick, the best prose writer, and Mrs. Sigourney, the sweetest poet in all the land; the author of "Twice Told Tales," Grenville Mellen, E. Sargeant, jr., John Pierpont, H. H. Weld, R. C. Waterston, &c., &c.

In short, the artists, authors, publishers, printers, and binders, and all concerned in producing the Token this year, have done the arts much credit, and deserve high praise, and, what we trust they will not fail to get, extensive patronage

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Twice Told Tales. BY NATHANIEL HAWTHORNE. Boston: American Stationers' Company—New York, S. Colman.

Eighteen as pretty little tales as ever were told; so good indeed, that the titlepage tells us they are here "twice told." Several of these are fully equal to any in the "Sketch Book." "Sunday at Home," "Sights from a Steeple," and "A Rill from the Town Pump," are sketches that will be remembered as long as the "Broken Heart," or the "Legend of Sleepy Hollow." In our judgement, there has been no book published these twelve months, worthy a higher place in one's affections, than this same "Twice Told Tales."

Miscellaneous Thoughts on Men, Manners, and Things By ANTHONY GRUMBLER, *of Grumbleton Hall, Esquire,* 12mo. 370 pages. Baltimore: Bayly & Burns, 1837.

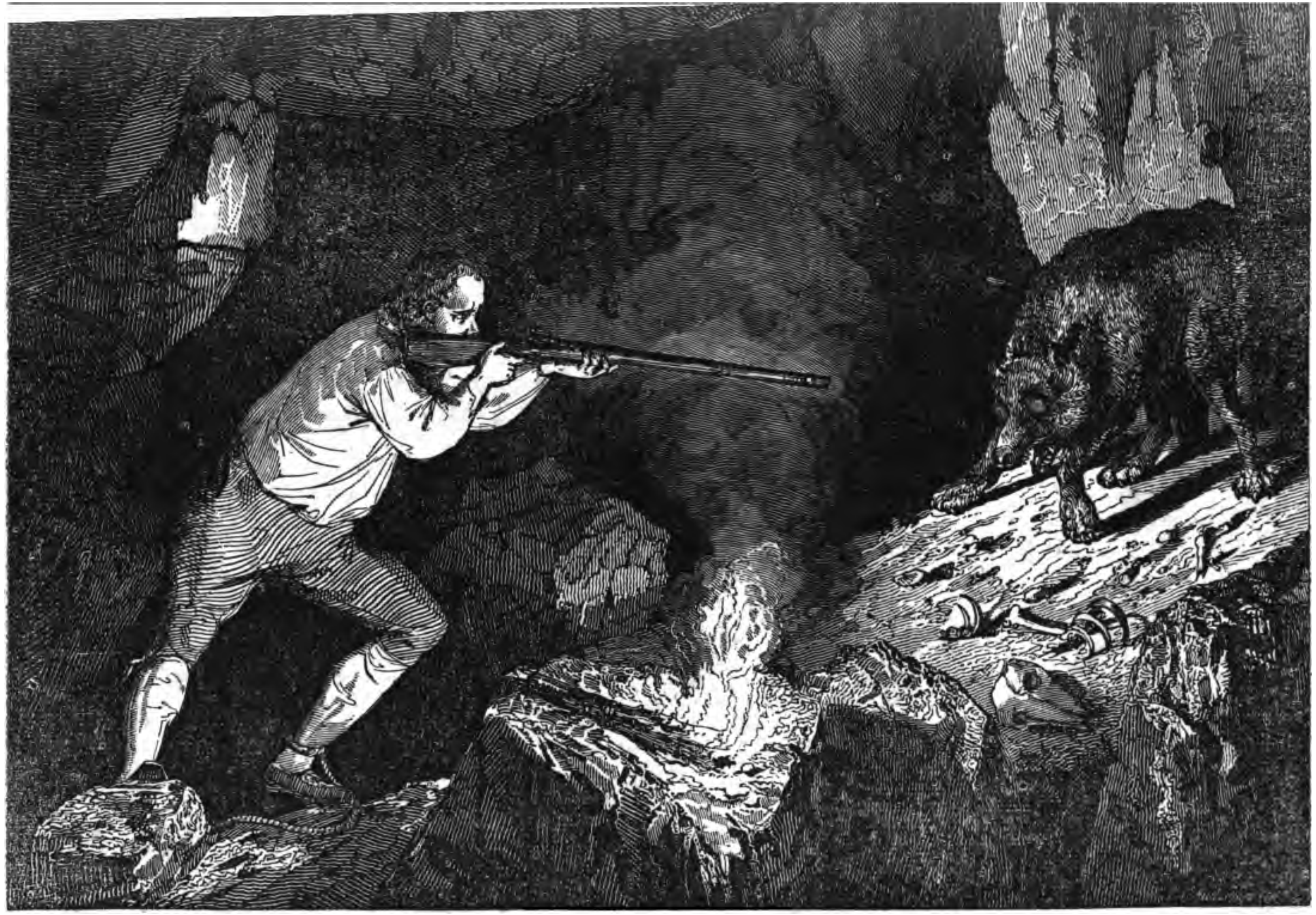
We have been much amused by the perusal of this volume. The author, professedly a *grumbler*, is evidently a shrewd observer of men, manners, and things—and his "thoughts," will win new laurels for his brow. The following extracts from his address to the reader, will give some idea of the author's style:—

> "COURTEOUS READER! The author doth assure thee this little volume was indited, more for *his own* edification and amusement than for *thine*; which the more readily will be credited, when thou art informed that for the fifth part of a century he hath been more a disciple of Coke's musty folios, than of Sir Walter's charming octavos; and, withal, hath more frequently turned the pages of Spencer and Chaucer, than of Moore and Byron!"
>
> * * * * * * * *
>
> "And now, indulgent or acrimonious critick, whether of EROMITLAB, from which I hail, or of other larger city, to which the admonitions contained in the first division may possibly be equally applicable; or politician, whether appertaining to the INS or the OUTS, I bid thee an affectionate farewell, promising thee, whether the following chapters be read or not, approved or not, that I shall never again turn censor morum—never again come in conflict with thy prejudices, habits, follies, vices but that if I should be seduced into the issuing forth of another little volume, it will be to paint thy virtues, the excellences of thy heart, the beauties of thy mind."

Stories from Real Life, being another volume of the little series published by S. Colman, N. Y., which was commenced with the far-famed "Three Experiments on Living." This volume contains a number of useful and interesting little stories from the most popular authors.—*Price twenty-five cents.*

Incidents of Travel, in Egypt, Petra, and the Holy Land. New York: Harper & Brothers. In our present number, the reader will find several extracts from this volume. illustrated with engravings. We are pleased to learn that the second edition is nearly ready; for the work has been, as the phrase is, *out of print* these four months.

Washington Medical College—Baltimore. In our present number, we give a view of this college, with a description of the building, for which we are indebted to the "circular" of the institution, recently published.



PUTNAM AND THE WOLF.

PUTNAM AND THE WOLF.

It needs not that we remind the reader what is the subject of our frontispiece to the present number. Every child in the land has heard its grandmother tell the story, and we are all familiar with it.

Dr. Andersen, however, has a way peculiar to himself, in perpetuating the recollection of these familiar incidents, as will be seen by reference to the engraving overleaf—and he desires that the "common version" should also be given, in order that the curious may compare notes.

To gratify him, therefore, we give the story as told by Col. Humphreys, the biographer of the intrepid Putnam.

"In the year 1799, Putnam removed from Salem, Mass., to Pomfret, an inland fertile town in Connecticut, forty miles east of Hartford; where he applied himself successfully to agriculture.

The first years on a new farm, are not, however, exempt from disasters and disappointments, which can only be remedied by stubborn and patient industry. Our farmer, sufficiently occupied in building a house and barn, felling woods, making fences, sowing grain, planting orchards and taking care of his stock, had to encounter, in turn, the calamities occasioned by drought in summer, blast in harvest, loss of cattle in winter, and the desolation of his sheepfold by wolves. In one night he had seventy fine sheep and goats killed, besides many lambs and kids wounded. This havock was committed by a she-wolf, which, with her annual whelps, had for several years infested the vicinity. The young were commonly destroyed by the vigilance of the hunters, but the old one was too sagacious to come within reach of gunshot: upon being closely pursued she would generally fly to the western woods, and return the next winter with another litter of whelps.

This wolf, at length, became such an intolerable nuisance, that Mr. Putnam entered into a combination with five of his neighbours to hunt alternately until they could destroy her. Two, by rotation, were to be constantly in pursuit. It was known, that, having lost the toes from one foot by a steel trap, she made one track shorter than the other. By this vestige, the pursuers recognised, in a light snow, the route of this pernicious animal. Having followed her to Connecticut river, and found she had turned back in a direct course toward Pomfret, they immediately returned, and by ten o'clock the next morning, the blood-hounds had driven her into a den, about three miles distant from the house of Mr. Putnam. The people soon collected with dogs, guns, straw, fire, and sulphur, to attack the common enemy. With this apparatus, several unsuccessful efforts were made to force her from the den. The hounds came back badly wounded and refused to return. The smoke of blazing straw had no effect. Nor did the fumes of burnt brimstone, with which the cavern was filled, compel her to quit the retirement. Wearied with such fruitless attempts, (which had brought the time to ten o'clock at night,) Mr. Putnam tried once more to make his dog enter, but in vain. He proposed to his negro-man to go down
into the cavern and shoot the wolf; the
clined the hazardous service. Then i
their master, angry at the disappointme
claring that he was ashamed to have a
his family, resolved himself to destroy th
beast, lest she should escape through som
fissure of the rock. His neighbours s
monstrated against the perilous enterpris
knowing that wild animals were intimida
and having provided several strips of bircl
only combustible material which he co
that would afford light in this deep and
cave, prepared for his descent. Having, ac
divested himself of his coat and waistcoat
ing a long rope fastened round his legs, by
might be pulled back, at a concerted signal
ed head foremost, with the blazing torch in

The aperture of the den, on the east
very high ledge of rocks, is about two fe
from thence it descends obliquely fifteen
running horizontally about ten more, it asce
ually sixteen feet toward its termination.
of this subterraneous cavity are composed
and solid rocks, which seem to have bee
from each other by some former earthqua
top and bottom are also of stone, and the
in winter, being covered with ice, is exc
slippery. It is in no place high enough for
raise himself upright; nor in any part m
three feet in width.

Having groped his passage to the horizo
of the den, the most terrifying darkness app
front of the dim circle of light afforded by h
It was silent as the house of death. None
sters of the desert had ever before explored
itary mansion of horrour. He, cautiously
ing onward, came to the ascent, which he
mounted on his hands and knees, until he dis
the glaring eyeballs of the wolf, who was si
the extremity of the cavern. Startled at th
of fire, she gnashed her teeth and gave a
growl. As soon as he had made the necess
covery, he kicked the rope as a signal for
him out. The people at the mouth of the de
had listened with painful anxiety, hearing the
ing of the wolf, and supposing their friend t
the most imminent danger, drew him forth wit
celerity, that his shirt was stripped over hi
and his skin severely lacerated. After he h
justed his clothes and loaded his gun wit
buck-shot, holding a torch in one hand and th
ket in the other, he descended the secon
When he drew nearer than before, the wolf
ming a still more fierce and terrible appearance
ing, rolling her eyes, snapping her teeth, and
ping her head between her legs, was evide
the attitude and on the point of springing
At this critical instant, he levelled and fired
head. Stunned with the shock, and suffocate
the smoke, he immediately found himself dra
of the cave. But having refreshed himself, a
mitted the smoke to dissipate, he went do
third time. Once more he came within sight
wolf, who appearing very passive, he appli
torch to her nose; and perceiving her dead,
hold of her ears, and then kicking the rope
tied round his legs,) the people above, with n
exultation, dragged them both out together"

RECOLLECTIONS OF GENERAL PUTNAM.

"In the winter of 1757, when Col. Haviland was commandant of fort Edward, the barracks adjoining to the northwest bastion took fire. They extended within twelve feet of the magazine, which contained three hundred barrels of powder. On its first discovery, the fire raged with great violence. The commandant endeavoured, in vain, by discharging some pieces of heavy artillery against the supporters of this flight of barracks, to level them with the ground. Putnam arrived from the island where he was stationed, at the moment when the blaze approached that end which was contiguous to the magazine. Instantly, a vigorous attempt was made to extinguish the conflagration. A way was opened by a postern-gate to the river, and the soldiers were employed in bringing water; which he, having mounted on a ladder to the eaves of the building, received and threw upon the flame. It continued, notwithstanding their utmost efforts, to gain upon them. He stood, enveloped in smoke, so near the sheet of fire, that a pair of thick blanket-mittens were burnt entirely from his hands—he was supplied with another pair dipped in water. Col. Haviland, fearing that he would perish in the flames, called to him to come down. But he entreated that he might be suffered to remain, since destruction must inevitably ensue if their exertions should be remitted. The gallant commandant, not less astonished than charmed at the boldness of his conduct, forbade any more effects to be carried out of the fort, animated the men to redoubled diligence, and exclaimed, "If we must be blown up, we will all go together." At last, when the barracks were seen to be tumbling, Putnam descended, placed himself at the interval, and continued from an incessant rotation of replenished buckets to pour water upon the magazine. The outside planks were already consumed by the proximity of the fire, and as only one thickness of timber intervened, the trepidation now became general and extreme. Putnam, still undaunted, covered with a cloud of cinders, and scorched with the intensity of the heat, maintained his position until the fire subsided, and the danger was wholly over. He had contended for one hour and a half with that terrible element. His legs, his thighs, his arms, and his face were blistered; and when he pulled off his second pair of mittens, the skin from his hands and fingers followed them. It was a month before he recovered. The commandant, to whom his merits had before endeared him, could not stifle the emotions of gratitude, due to the man who had been so instrumental in preserving the magazine, the fort, and the garrison."

"A few adventures, in which the public interests were little concerned, but which, from their peculiarity, appear worthy of being preserved, happened before the conclusion of the year. As one day, Major Putnam chanced to lie, with a batteau and five men, on the eastern shore of the Hudson, near the rapids, contiguous to which fort Miller stood; his men on the opposite bank had given him to understand, that a large body of savages was in his rear, and would be upon him in a moment. To stay and be sacrificed—to attempt crossing and be shot—or to go down to the falls, with an almost absolute certainty of being drowned, were the sole alternatives that presented themselves to his choice. So instantaneously was the latter adopted, that one man who had rambled a little from the party, was, of necessity, left, and fell a miserable victim to savage barbarity. The Indians arrived on the shore soon enough to fire many balls on the batteau before it could be got under way. No sooner had our batteau-men escaped, by favour of the rapidity of the current, beyond the reach of musket-shot, than death seemed only to have been avoided in one form, to be encountered in another, not less terrible. Prominent rocks, latent shelves, absorbing eddies, and abrupt descents, for a quarter of a mile, afforded scarcely the smallest chance of escaping without a miracle. Putnam, trusting himself to a good Providence, whose kindness he had often experienced, rather than to men, whose tenderest mercies are cruelty, was now seen to place himself sedately at the helm, and afford an astonishing spectacle of serenity: his companions, with a mixture of terrour, admiration, and wonder, saw him incessantly changing the course, to avoid the jaws of ruin, that seemed expanded to swallow the whirling boat. Twice he turned it fairly round to shun the rifts of rocks. Amidst these eddies, in which there was the greatest danger of its foundering, at one moment the sides were exposed to the fury of the waves; then the stern, and next the bow, glanced obliquely onward, with inconceivable velocity. With not less amazement the savages beheld him sometimes mounting the billows, then plunging abruptly down, at other times skilfully veering from the rocks, and shooting through the only narrow passage; until, at last, they viewed the boat safely gliding on the smooth surface of the stream below. At this sight, it is asserted, that these rude sons of nature were affected with the same kind of superstitious veneration, which the Europeans in the dark ages entertained for some of their most valorous champions. They deemed the man invulnerable, whom their balls (on his pushing from shore) would not touch, and whom they had seen steering in safety down the rapids that had never before been passed. They conceived it would be an affront against the Great Spirit, to attempt to kill this favoured mortal with powder and ball, if they should ever see and know him again."

"In the battle of Princeton, Capt. M'Pherson, of the 17th British regiment, a very worthy Scotchman, was desperately wounded in the lungs and left with the dead. Upon General Putnam's arrival there, he found him languishing in extreme distress, without a surgeon, without a single accommodation, and without a friend to solace the sinking spirit in the gloomy hour of death. He visited and immediately caused every possible comfort to be administered to him. Capt. M'Pherson, who contrary to all appearances recovered, after having demonstrated to Gen. Putnam the dignified sense of obligations which a generous mind wishes not to conceal, one day in familiar conversation demanded—'Pray, sir, what countryman are you?' 'An American,' answered the latter. 'Not a Yankee!' said the other. 'A full-blooded one,' replied the general. 'By G–d, I am sorry for that,' rejoined M'Pherson, 'I did not think there could be so much goodness and generosity in an American, or, indeed, in anybody but a Scotchman.'"

NATURAL HISTORY.

The above group of animals consists of a *scape-goat*, and young bullock, goat and kid of goats, which were used by the highpriest of Israel, for a sin-offering. See Levit. xvi. 10, *et seq.*

The scape-goat is the large white one above figured with a riband or fillet tied around his horns.

"*Let him go for a scape-goat into the wilderness.*" A commentator holds the following language on this text:—

'The Rabbins inform us, that after the lot had been taken, the highpriest fastened a long fillet, or narrow piece of scarlet to the head of the scape-goat; and that after he had confessed his own sins and those of the people over his head, or (for we are not quite certain about the point of time,) when the goat was finally dismissed, this fillet changed colour to white if the atonement were accepted by God, but else retained its natural colour. It is to this that they understand Isaiah to allude when he says:—'Though your sins be as scarlet, they shall be white as snow; though they be red like crimson, they shall be as wool.' (Isaiah i. 18.) After the confession had been made over the head of the scape-goat, it was committed to the charge of some person or persons, previously chosen for the purpose, and carried away into the wilderness; where, as we should understand, verse 22, it was set at liberty; but the Rabbins give a somewhat different account. They inform us, (speaking with a particular reference to Jerusalem and the temple service,) that the goat was taken to a place about twelve miles from Jerusalem where there was a formidable rocky precipice; and they add, that for this occasion a sort of causeway was made between Jerusalem and this place, and that ten tents with relays were stationed at equal distances between them. On arriving at the precipice the goat was thrown down from its summit, and, by knocking against the projections, was generally dashed to pieces before it had half reached the bottom. It is added that the result of this execution was promptly communicated, by signals, raised at proper distances, to the people who were anxiously awaiting the event at the temple. It is also said, that at the same time a scarlet riband, fastened at the entrance of the temple, turned red at this instant of time, in token of the divine acceptance of the expiation; and that this miracle ceased forty years before the destruction of the second temple. We do not very well understand whether this fillet is a variation of the account which places one on the head of the goat, or whether there were two fillets, one for the goat and the other for the temple. If the latter, we may conclude that the change took place simultaneously in both. However understood, it is very remarkable that the Rabbins, who give this account of the fillets, assign the cessation of the miracle by which the divine acceptance of this expiation was notified, to a period precisely corresponding with the death of Christ—an event which most Christians understand to have been prefigured by atoning sacrifices, which they believe to have been done away by that final consummation of all sacrificial institutions. The assertion of the apostle, that without the shedding of blood there is no remission of sin, (Heb. ix. 22,) renders the account of the Rabbins that the goat was finally immolated, rather than left free in the wilderness, far from improbable, were it not discountenanced by verse 22. It is however possible that the Jews may have adopted the usage described when they settled in Canaan, and could not so conveniently as in the wilderness carry the goat to a land not inhabited. But they allow that it sometimes escaped alive into the desert, and was usually taken and eaten by the Arabs, who, of course, were little aware of what they did."

THE CORMORANT.—Pelicanus carbo.

"Cormorants are sometimes called sea-ravens, or sea-crows, and they have nearly the same voracity as the land-ravens, though their prey and manner of catching it are both very different. Cormorants generally fish near the shores, and are more frequently on the wing over the water than at rest upon the rocks. When they pursue their prey in the sea, they do not hesitate in coming near inhabited places; but when they fish in the fresh waters, they choose more lonely haunts. They catch their prey, which consists wholly or chiefly of fish, by the middle with the bill; and as they cannot easily swallow it from this position, or indeed, if it is presented to the gullet in any other way than head foremost, they throw it into the air and seize it with great dexterity as it falls. All birds which fish along the surface of the water, and indeed all animals which swallow their prey without masticating or dividing it with the teeth, are dexterous at this mode of turning a fish.

This is one of the most remarkable instances of adaptation with which we meet in nature, and ought to teach us to look for the intelligence of the creature somewhere else than in the creature itself, from the fact that the action performed in this perfect manner by the organized animal, is not the result of the organization, neither is the organization the result of action. A cormorant does not catch fish by dashing into the water, and following them to a greater or less depth, as may be necessary, *because* its feet, its wings, its bill, and all the other parts of its organization, are fitted for such purposes, any more than it throws the fish up in the air, because it has a knowledge that the fish will come down in a more manageable posture for swallowing than that in which it is seized by the bill. As little can we say that the bill has or can have any control over what its organization shall be, for the organization precedes the action in the order of nature. The instinct follows the race, and is true to it; which we find is not the case either in knowledge or in action with us Therefore, when we examine the more curious functions which are performed by the lower animals, (as we term them,) we meet with far more striking evidences of Almighty wisdom and power than we do in the case of human conduct. There are no productions which assist us more in the forming of these general views than those birds which seek their food in the waters; and as the cormorants find their food by skill and energy, not by craft, there are few seabirds better worth our attention.

The characters of the genus are as follows:—The bill long, or of mean length, compressed, rounded in the culmen, straight for the greater part of its length, but much hooked at the tip of the upper mandible, and having the extremity of the lower one truncated, so as to act against the hook. The base of the bill has a small cere, and the naked skin is continued on the throat, and partially also on the face. The nostrils are at the brow of the bill, in the form of longitudinal slits, and barely visible. The legs are stout, the tarsi short, and rather inclined toward each other. The hind toes are turned inward, and included in the web of the feet; the outer toe is the longest and strongest in the foot; the claws are not large for the size of the foot, and that on the middle toe is toothed on the edge. The wings are of rather more than mean length, and they are rather pointed, the second quill being the longest. They are not, however, formed for whirling and turning rapidly in the air; and the rounded extremity of the tail further shows, that whirling in the air is not one of the principal actions of the bird.

The *Pelicanus carbo*, or common cormorant, is common on the British shores, and in some places it moves inland to the lakes which are near the sea, or to the larger rivers, which have long tideways. In these last situations, it is often found standing or nestling on trees; but as a sea-bird, its place of repose and nestling is the rocks.

This is a large bird: three feet in length, nearly five feet in the extent of the wings, and weighing as much as seven pounds; but this must be considered as the dimensions of a large specimen, and the sizes are apt to vary. Length of the bill about five inches and of a dusky colour for the greater part of its length, but with the cere yellow; tarsi, toes, and webs sooty black; irides bright green. The plumage varies a little with the season. General colour, greenish black, with black margins to the feathers on the back, and a line of ash colour on the scapulars. In the breeding season, the neck and thighs are mottled with small white feathers, and there is a crest of long green feathers on the back of the head. In winter these feathers fall off, and the general teint of the upper part becomes rusty. There is also a white gorget on the neck, which becomes much duller in the colour during winter.

Though these birds are generally found in remote and inaccessible places for their nests, such as high trees and detached rocks, they are social with each other, and many nests are often found in the near vicinity of each other. The eggs are three or four in number, of about two ounces in weight, greenish white, and with the surface of the shell rather rough.

Though cormorants are industrious and successful fishers, and as such, thin the waters of their finny inhabitants to a considerable extent, yet they pursue their fishing with peace and good order, and never interfere with or annoy any other birds. It can be tamed very readily; and a detailed account of one in a domesticated state may be found in Montagu's Ornithological Dictionary."

THE COMMOM HOOPOE.—Upupa epops.

The hoopoes are inhabitants of the banks of rivers, chiefly of those rivers which are alternately flooded and low, from the alternation of rain and drought. There they feed upon beetles, and other ground insects, and on the spawn of fishes and reptiles. The number of insects which they capture is very great; so that they render no unimportant services to those countries which they frequent, from their activity; they are necessarily voracious feeders, and their nests are somewhat rank with the remains of their abundant food, as is the case with the bee-eaters, the kingfishers, and most of those birds of powerful wing and frequent flight which haunt the margins of the rivers. As is the case with most, if not all of the section, the hoopoes are very handsome birds, fine in their forms and graceful in their motions. There are only two species of them, one of which ranges for a considerable extent over the tropical and northern parts of the eastern hemisphere, over the southern parts of the same, we believe principally confined to Africa, though it also occurs in the south of Asia.

The common hoopoe (*U. epops*) is a very beautiful bird, measuring about a foot in length, and a foot and a half in the stretch of the wings, and weighing about three ounces. On the upper part, it is of a rust colour, or rather of a vinous red, with the wings and tail black, crossed with two white bands on the wing-coverts, and four on the quills; the tail is crossed by a crescent-shaped bar of white; and the crest-feathers, which are orange, tipped with black, formed of two rows, and capable of being erected at the pleasure of the bird, give the bird a handsome appearance; the head, neck, and breast, are brownish red, and the rest of the under parts are whitish, streaked with brown. These birds are very discursive with the seasons; they chiefly winter in Africa, at least in the European longitudes, while in the eastern part they find their way southward to India. In the south of Europe they appear in considerable numbers, generally in small flocks, which arrive in the extreme south about the month of March, but they do not make their way to the middle latitudes until the end of the spring, and they retire again at the close of summer. In Britain they appear only as occasional stragglers, and, from the season at which some of them have been obtained, one would be led to suppose that they are strays, who have lost the proper line of migration, and so cannot find their way back again to the south. Within these few years one was shot in Cornwall, England, in the month of December, which is more than three months later than the time when the regular migrants depart from central Europe. Their straggling into this country bears some resemblance to that of the bee-eaters, pratincoles, and other birds which belong to the central valley of the eastern continent, much more than to the countries on the shores of the Western sea. We look for our regular migrant birds in the warmth of summer only, or chiefly, in the southern parts of the country; but such a bird as the hoopoe is just as likely to occur in Caithness as in Cornwall, and in the Orkneys or the Hebrides, as in the isles of the Channel. In the eastern parts of the continent they range much farther to the north on their summer excursions, and are not uncommon in Russia, or even in Siberia. This might, however, be expected; for, though the winters there are exceedingly cold, and the summers of short duration, those short summers are very warm, and the country is thronged with such animals as those upon which the hoopoes feed.

Hoopoes, and also some of the other birds which most resemble them in haunts, habits, and character, are understood to make a sort of perpetual summer of it, unless in the case of such strays as happen to fall upon our winter, by missing the line and time of their migration. In consequence of this, the birds are understood to breed two or three times, or even more frequently, according to circumstances, in the course of the year. The nest is described as being rather miscellaneous in its position, but, true to those migrant birds of the banks of rivers, always in some sort of concealment. It may be in a hollow tree, among the tangled roots near the ground, in a hole of a wall, or a crevice of the rock; and though the female does adapt her labour in building so as slightly to improve the less commodious places, yet she is no very skilful nest-builder; and the extent of her labour usually goes no farther than collecting, first, a few withered leaves, and then a few feathers. The hatch varies much in number, being as many as seven when the situation and season are peculiarly favourable, and not more than two when circumstances are the reverse.

In Egypt and several other parts of Africa, the birds frequent the meadows in the close vicinity of human dwellings; but on their northern excursions, they are rather fond of solitary places. In Egypt, indeed, they are greatly encouraged, for their labours in destroying the insects with which the humid banks of the Nile are infested, and accordingly they are as familiar and have their nests as much intermixed with the dwellings of the people as the common house-swallows have with us. The eggs are oblong, of a bluish white colour, and marked with small spots of pale brown. The young have to be fed for a considerable time in the nest, and the feeding of them is rather a laborious occupation for their parents. As is the case with all birds of similar habits, the hoopoes have no song, but they have a sort of three calls; one a hollow booming note thrice repeated without modulation; another a little more musical, but still not modulated, which is the love-song; and a sharp hissing note, which is the sound of alarm. In their low flight they jerk on the wing, flirting the tail at the same time; and when alarmed, they erect the crest and spread the tail fan-wise. They are very easily tamed, and can be made to remain without confinement if they are properly fed. Their flesh is eaten in the south of Europe, but is not understood to be of much value."

THE SACRED IBIS.

"This bird has been very celebrated from comparatively remote antiquity, for its real or supposed services to the ancient Egyptians, in destroying offensive and poisonous reptiles, and generally for scavengers' work done about the temples and houses. For these reasons it was admitted into the temples themselves among the numerous other animal-gods of the Egyptians; and mummies of it were preserved with the same assiduous labour of embalming as those of men and monkeys. Notwithstanding this ancient celebrity, however, and the pains which were taken to perpetuate specimens of the carcass of this animal, those schemes did not accomplish their purpose; and in times comparatively modern, there have not only been disputes about which species is the sacred ibis, but some have contrived to mystify the matter to such an extent, that, if we did not possess the living bird to which we can appeal for its own history, we should have remained ignorant as to what bird received those high honours in the olden time.

Bruce was the first who, in modern times, gave an accurate account of the bird; but it was not until other evidence had been produced in corroboration of his statements, that he received the credit to which he is so well entitled. This bird is not confined to Egypt, but is very generally distributed throughout Africa. It is a bird about the size of a common fowl, with the plumage entirely white, except the quills, the points of which are black, and the last coverts of the wings have long and slender barbs also of a black colour, and with violet reflections, which hang down over the extremities of the closed wings, and the tail, the bill and feet are also black, and so is the naked skin on the head and neck. These birds are very common in the central parts of Africa, and also in that part of the valley of the Nile which is liable to be flooded. Sometimes they are found solitary, and at other times they are found in groups, but seldom more than ten or twelve are in close society with each other. A number of these little groups are, however, often found close to each other, especially after the water of the Nile has begun to subside, and the banks are for some extent covered with soft mud. This mud they search with the most patient industry with their bills; and in moving about while on the ground they do not hop and run nimbly as the curlews do, but march along with measured steps; when on the wing they project the head forward and the feet backward; but there is not the same majesty in their aërial journeys as there is in those of the storks and cranes, neither do they extend their migration so far to the northward. Their flight is powerful, however, and they rise to a great elevation.

It does not appear that there is a very great deal of foundation for that clearing of the country of poisonous reptiles, on account of which the Egyptians are said to have held the ibis in such veneration; for the chief ground adduced for this propensity in the old account given by Herodotus, is the antipathy which the ibis had to the serpent race. In consequence of this the bird is said to have acted the part of a sort of preventive service, to hinder the serpents from smuggling themselves into the Egyptian territory. Now this is so contrary to the whole tenour of animal conduct, that it can hardly, in the nature of things, be true. Animals do not kill each other from what we call antipathy, unless in the case of those males which fight battles of gallantry for their females—we believe the propensity goes no farther; and the greater number of them, whether mammalia or birds, are vegetable feeders, and never kill other animals for the sake of eating. On the other hand, we believe there is no animal which kills, or even offers to injure, any other species, except for the purpose of feeding on that species; and, therefore, if the ibis have been a serpent-feeder, it must have eaten the reptiles from liking them, and not from antipathy to them. Besides, there are not in those places of the country to which chiefly the ibis resorts, very many serpents for the birds to eat, either from liking or disliking. Water-serpents are not, we believe, very numerous in the Nile; and the land-serpents of Egypt are chiefly, if not exclusively, found in the dry and sandy places in which the ibis seldom if ever seeks its food; besides, the bill of the ibis is not of a very serpent-killing character; for though it is stouter and harder than the bills of the true snipes, and even than that of the curlews, it is still a bill of the same class. Birds with the more characteristick bill of this form feed chiefly upon small mollusca, and other little animals which they find on the moist surface of the ground, or in the sludge; and so far as has been observed in modern times, the ibis seeks its food in similar places, and hence we may conclude, that it feeds on substances of a similar kind. Birds which do feed on serpents are always very long in the tarsi, which is not the case with the ibis, and they also have powerful bills. Cultrirostral birds, such as cranes and storks, and the other birds of that family, are more likely to perform this office than such a bird as the ibis. It may be true, however, that the American species of Tantalus, which is a hard-billed bird, and does eat reptiles, may have been confounded with the ibis in ancient times, as it has sometimes been by modern naturalists."

BALM OF GILEAD.

"'BALM,' is the famous resin obtained from the *Balsamodendron Gileadense*, or balm of Gilead tree, which was a native of, and almost peculiar to, the land of Judea. It is related to the terebinth and other trees, which are noted for the fragrant 'gums' which they yield. A small piece of this resin is said by Theophrastus to be so odoriferous, that it filled a large space with its perfume. The author just quoted, informs us it was n
that only two enclosures of small
to produce this tree, which wer
Syria. Bruce describes it, howe
Azab, and all along the coast of B
balsam of Gilead is about fourtee
diverging branches that bear leave
ities. These leaves are pennate
those of the terebinth, and evergr
ration. The fruit is a berry, or rat
egg shape, marked with four seam
cells. The *kataf* of the Arabians
species of this genus, as is also th
are both of them odoriferous resins,
the East."

CORIANDER.—Coriandrum Sativum.

THIS is one of the favourite spices which w
found in most of our gardens. The following i
botanical description:—

"Coriander is an umbelliferous plant akin to
parsley in family characteristicks. The flov
grow in an umbel, and are individually small
white. The leaves are much divided, and smo
The seeds are employed, from their aromatick
ture, in culinary purposes, and hence their rou
and finished shape is well known. In the umbell
erous plants the fruit uniformly separates into tv
similar halves, which are the seeds; but in the c
riander they continue united after they are ripe.
we examine the seed we shall perceive very readil
that it is compounded of two, while a reference t
the parsley, or any other example of the umbelliferous family, will illustrate the peculiarity of the coriandrum in this respect."

"I resolve," says Bishop Beveridge, "never to speak of a man's virtues before his face, nor of his faults behind his back."

NATURAL PHILOSOPHY.

At the request of many of our subscribers, we shall give a course of articles on Natural Philosophy, for the use of schools and families. The articles will be compiled from the best authorities, and include the usual number of branches taught under that head in our schools, commencing with

MECHANICKS.

THE science which treats of forces and of motion is called Mechanicks. It had, probably, its origin in the construction of machines, and an important branch of it, practical mechanicks, investigates their construction and effects. Forces acting upon bodies may either produce rest or motion. In the former case they are treated of under staticks, in the latter under dynamicks.

Hydrostaticks and hydraulicks respectively treat of *fluids*, at rest or in motion. When a body is acted on by two or more forces which counteract each other, so that no motion is produced, the body and the forces are said to be in a state of *equilibrium*. The conditions of equilibrium form the subject of staticks.

1. A body acted upon by two equal and opposite forces will remain at rest. In this case either of the two opposite forces may be, made up of several parallel forces. It is then said to be the *resultant* of those forces.

2. If two forces act with reference to each other obliquely upon a body, they may be counteracted by a third (called also their *resultant*). If the two forces be represented in direction and intensity by two contiguous sides of a parallelogram, their result will be represented in direction and intensity by its diagonal. This is called the *parallelogram of forces*.

3. If several forces, acting at once upon a polygon, they may be counteracted by a single force, acting in a direction and with an intensity represented by the side which would be necessary to complete the polygon.

All the changes which come under our observation in this science are the consequence of motions produced by the action of a few great elementary forces. The consideration of the motions which take place among the particles only of one or of several bodies comes within the department of chymistry. Those motions which affect masses are the appropriate subject of the second part of mechanicks.

All motions are found to take place in conformity to a few universal principles deduced from observation and confirmed by experiment. These principles have often been placed at the beginning of treatises on mechanicks, under the name of the *laws of motion*. If not expressed in this manner, the truths they declare, making an essential part of the principles of the science, are necessarily introduced under some other form. Their comprehensiveness adapts them to our purpose, and they are here quoted in the language of Newton:—

I. "Every body perseveres in its state of rest, or of uniform motion in a right line, unless it is compelled to change that state by forces impressed thereon."

This is called the law of *inertia*, and expresses the entire indifference of matter to motion or rest. The proposition that a body will never begin to move of itself needs no proof: it is the conclusion of universal observation. Wherever we observe motion we conclude that there is a power in action to produce it. The other part of the law, that motion is, in its nature, as permanent as rest, and that it is in a right line, is far from being a self-evident, or even an obvious truth. Limited observation would lead to the conclusion that all matter has a tendency to rest, and such has long been, and still is, a common errour. The same limited observation led some of the ancient astronomers to imagine that all bodies when forced into a state of motion naturally moved in curved lines. There is, however, abundant proof of the permanence of motion; and if friction and the resistance of the air, the two most universal obstacles to the motion of bodies near the surface of the earth, could be entirely removed, instances of permanent motion would be still more numerous. In proportion as they are removed, or as bodies are beyond their influence, we observe a tendency in the motions of those bodies to become more and more permanent. A marble, rolled on the grass, soon stops; on a carpet, it moves longer; on a floor, still longer; and on smooth level ice, where the wind is not unfavourable, it continues very long in motion. In a vacuum, where the resistance of air is not felt, two windmills, whose pivots have equal friction, and which are set in motion by equal forces, continue to move equally long whatever be the position of their vanes. In the air, the one whose vanes cut the air, will move much longer than the one whose vanes are opposed to it. A pendulum in a vacuum, having only the stiffness of the riband by which it is suspended to overcome, will vibrate for a whole day. A spinning-top in the same situation, retarded only by the friction of its point, is said to continue spinning for hours. In all these cases the continuance of the motion is proportioned to the diminution of friction and resistance. We can hardly avoid the conclusion that a body once put in motion, would, if left to itself, continue to move with undiminished velocity.

The heavenly bodies, moving in free space, subject to no opposing influence, keep on in their path with a velocity which has remained unabated since first they were launched from the hand of the Creator. They move not, indeed, in straight lines, but in curves, as they are drawn towards each other and towards a centre by the universal force of gravity. This force does not diminish their velocity, but deflects them continually from the right line in which they tend to move. If this central force were suspended, they would all shoot forward into space, and the harmony of their motions would cease. Some force similar to this central tendency is always in action whenever we see bodies move in curve lines.

The stone, to which a boy gives accumulated force by whirling it round in a sling, is, for a time, kept in its circle by the central force represented by the string; when let loose it darts forward in the air, turning not to the right or left, until the atmospherical resistance destroys its motion, or the force of gravity bends it to the ground. A full tumbler of water placed in a sling, and made to vibrate with gradually increasing oscillations, may at last be made to revolve in a circle about the hand, each drop tending to move out in a straight line from the centre, and therefore remaining safe in the tumbler, whose bottom is always farthest from the centre. In a corn-mill the grain is poured gradually into a hole in the centre of the upper mill-stone. The weight of the stone pulverizes the corn, while its circular motion throws it out as fast as it is ground into a cávity around the stone. When a vessel, partly full of water, is suspended by a cord, and made to turn rapidly round, the water, in its tendency to move out in a straight line, recedes from the centre, and is gradually heaped up against the sides of the vessel, sometimes even leaving a portion of the bottom dry. Water moving rapidly in the stream of a river, or the tide of the sea forced violently through a narrow passage between opposite rocks, not unfrequently forms a whirlpool on the same principle. Bent out of its course by a projecting ledge, it departs, as if reluctantly, from a straight line, and heaps itself up towards the circumference of the circle in which it is compelled to move. To this cause, too, it is owing, however little we might expect such a consequence, that a river, passing through an alluvial soil, and once turned from its onward channel, continues to pursue a meandering course to the sea. Driven, by any cause, to one side, it strikes the bank with all its violence, is repelled, and rebounds with the same force to the opposite side, continually wearing the two banks, and leaving a larger space on the inner side of the bends.

The force with which a body constrained to move in a circle tends to go off in a straight line is called the *centrifugal force*. Advantage is taken of it in many processes of the arts, and in all circular motions of machinery. The clay of the potter is placed on the centre of a swiftly revolving table, and while his hand shapes it the centrifugal force causes it to assume the desired dimensions. A globe, or sheet of molten glass, is in a similar manner made to expand itself. The legs of a pair of tongs, suspended by a cord, and made to revolve by its twisting or untwisting, will diverge in proportion to the velocity of the revolution.

The *steam-governer* of Watt is constructed and acts on this principle. Weights are attached to two rods, to which a circular motion is communicated by the machinery which is to be governed. If the motion be so rapid as to cause these rods to diverge from each other beyond a certain angle, they act upon a valve which partly closes and diminishes the supply of steam. With a slower motion the rods collapse, and the valve is opened.

In consequence of the centrifugal force occasioned by the rotation of the earth, the weight of bodies at the equator is diminished the 289th part. If the earth revolved on its axis in eighty-four minutes, the loose parts near the equator would be projected from the surface. Another consequence or particular of the law of inertia is, that motion is communicated gradually. A force which communicates a certain quantity of motion in one second will impart double the quantity in two seconds. A ship does not yield at once to the impulse of the wind when the sails are set; its motion increases as new portions are successively imparted. A horse does not start at once with a carriage into his utmost speed; his force is at first spent in giving motion to the inert mass. Afterward, with far less exertion, he keeps up the motion, being required to supply that portion only which is destroyed by the obstacles of the road. The motion communicated to a body, if not destroyed by some force, is accumulated. Thus a nail is driven in by all the force of the hand, accumulated through the whole time of the descent of the hammer. The knowledge of this fact gives the means of increasing the effective force of a moving power in a very great degree. A force of fifty pounds communicated every second to a loaded wheel will, if not diminished by friction or other cause of waste, enable it to overcome a resistance of five hundred pounds once in every ten seconds. Such a wheel is called a *fly-wheel*.

II. "The alteration of motion is ever proportioned to the motive force impressed, and is made in the direction of the right line in which that force is impressed." This is only a statement that a double force generates a double motion; that motion cannot increase or diminish itself, nor turn to the right or left without cause. In consequence of this, two or more forces acting at once on a body in different directions cause it to take a direction different from that of either force, and, if one of them is a variable or constantly acting force, to move in a curve line. This is called the *composition of forces*, the single motion impressed upon the body being considered as composed of the several motions which the forces acting separately would have produced. A boat, rowed at the rate of three miles an hour directly from the bank of a river which runs at the rate of two miles an hour, is acted on at once by the force of the rowers and that of the current, and will be found, at the end of an hour, three miles from the bank, and two miles below the point from which it started, having moved in a diagonal line between the directions of the two forces.

The *resolution* of forces is the reverse of this. A single force is considered as resolved into two or more others. A ship, sailing on a side wind, is sent forward by a part only of its force. The other part has no effect, or that only of driving her out of her course.

III. "To every action there is always opposed an equal reaction; or the mutual actions of two bodies on each other are equal and in opposite directions." If you press a stone with your finger, the finger is equally pressed by the stone. A horse drawing upon a load is drawn backward by its whole weight, and, if he succeed in moving it, it can only be with a velocity proportioned to the excess of his strength over the reaction of the load. A magnet and piece of iron attract each other equally; and if, when in the sphere of mutual attraction, one is fixed and the other free, whichever is free will be drawn to the other. Two equal boats, drawn towards each other by a rope, act in the same manner; if both are free, they meet in the middle. When a gun is discharged, it recoils with a force equal to that with which the ball is propelled, but with a velocity as much less as its weight is greater. If, in the side of a vessel of water, hanging perpendicularly by a cord, a hole be opened, the vessel will be pushed back from the perpendicular by the reaction of the jet of water, and will remain so while it flows. A consequence of this law is, that the earth is attracted by each body on its surface as much as it attracts, and that when a stone falls toward the earth the earth rises to meet it. The force with which a body acts is estimated by its velocity and mass conjointly, and is called its *momentum*. Thus, if two balls of one and two pounds weight respectively be moving with the same velocity, the larger has twice the momentum of the smaller, since each pound of the larger has the same velocity as the ball of a single pound. A body of small weight may therefore be made to produce the same mechanical effect as a large one, by sufficiently increasing its velocity. The cannon-ball of modern times is not less effectual in battering down walls than the massy battering-ram of the ancients. The forces which may be employed to give motion to machines are called *mechanical agents* or *first movers*. They are water, wind, steam, gunpowder, and the strength of man and other animals. They may be indirectly referred to three independent sources—gravity, heat, and animal strength.

Gravity. A body falling from a state of rest, descends 16 feet, nearly (16.095), in one second; but, as all the motion which is communicated by gravitation remains in it, and it receives an accession of motion every indefinitely small portion of the first second, it is moving more rapidly at the end of the second than at any previous time, and with that motion alone, if it continued uniform, would descend through twice sixteen or thirty-two feet in the next second; but during this next second as much motion is communicated as during the first, and consequently the body descends through three times sixteen or forty-eight feet in this next second. The whole of this accumulated motion would alone carry it through four times sixteen or sixty-four feet in the third second, and the continued action of gravitation carries it once sixteen; so that it actually descends five times sixteen or eighty feet during the third second. In the fourth second it would, in the same manner, descend seven times sixteen feet; in the fifth, nine times sixteen, &c., the series of odd numbers expressing the distances passed through in the successive seconds. By adding these numbers we find that at the end of two seconds the body will have descended four times sixteen feet; at the end of the third, nine times sixteen; at the end of the fourth, sixteen times sixteen, &c.; the whole distance fallen through at the end of any number of seconds being found by multiplying the square of that number by sixteen feet. Such is the simple and remarkable law of the descent of bodies by the uniformly accelerated velocity produced by gravitation. The velocity acquired in one second is sufficient of itself to carry a body through twice sixteen feet; that acquired in two seconds would carry it four times sixteen feet; that acquired in three seconds, through six times sixteen feet, &c., the velocities possessed at the end of any number of seconds being represented by twice that number multiplied by sixteen feet. The following table exhibits, 1, the space fallen through in the successive seconds; 2, the whole space fallen through at the end of a number of seconds; and, 3, the final velocity:—

	Time,	1	2	3	4	5	6	7	8	9	10	seconds.
1.	Successive spaces,	1	3	5	7	9	11	13	15	17	19	times 16 ft.
2.	Total spaces,	1	4	9	16	25	36	49	64	81	100	" "
3.	Final velocity,	2	4	6	8	10	12	14	16	18	20	" "

By means of this table, a traveller standing on the summit of a cliff might ascertain its height above the plain or torrent below, with considerable accuracy, by letting fall a stone and observing the time of its fall. It would only be necessary to make allowance for the resistance of the air, which, for small velocities, is not very great.

The same cause which communicates motion to a falling body would gradually destroy that of a body ascending. A ball projected upward with the velocity of 1000 feet per second would, therefore, rise with a uniformly retarded motion to the height from which a body must fall to acquire that velocity. The phenomena of accelerated and retarded motion are beautifully exhibited by Atwood's machine for that purpose. In moving down an inclined plane, a solid body is urged by a portion of the force of gravitation, which is continually smaller as the plane is nearer to a horizontal position. When it is horizontal, the whole weight of the body is sustained by the plane. The velocity acquired by bodies moving down planes of different inclinations, is the same as they would have acquired by falling freely through a distance equal to the perpendicular height of the plane. It is necessary, in the construction of machines, carriages, buildings, bridges, and ships, and in many other cases, to ascertain exactly the centre of gravity of the whole and of each part; since, if the centre of gravity, in any body or system of bodies, be supported, the whole must remain firm, and in a state of rest, in every possible position. The various problems arising from this necessity, have been solved with great accuracy, and on fixed principles. In all regular solids of uniform density, whether bounded by straight or curve lines, the centre of gravity coincides with the centre of magnitude.

If a body of any shape be suspended freely from any one point of its surface, the straight line extending from that point to the centre of the earth will pass through the centre of gravity. This line is called the *line of direction.* The centre of gravity may, therefore, sometimes be found, practically, by suspending a body successively from two of its points, and observing the point where the lines of direction cross each other. The centre of gravity of a triangle is at one third the distance from the middle of the base to the vertex; that of a cone and of a pyramid at one fourth the same distance.

Stability, in every case, depends upon the position of the centre of gravity in reference to the base. The nearer it is to the base, and the further the line of direction falls from each part of the perimeter of the base, the greater is the stability. The sphere rests equally in every position, because the centre of gravity is at the same distance from every part of the surface; it is unstable in every position, as it rests on a single point of the plane; and it yields to the smallest force, as the centre of gravity does not rise when the sphere revolves. In order that the pyramid or cone may be overturned, the centre of gravity must rise almost perpendicularly, and move for a great distance before it ceases to tend to fall back to its place. Hence their stability, and hence the propriety of giving to steeples, monuments, and other buildings of great height, a pyramidical or conical figure. Those carriages are most secure which are hung low, and have the wheels far apart. Whatever raises the centre of gravity or narrows the base allows the line of direction more easily to pass without it, and consequently diminishes stability.

Hence we see the imprudence of rising in carriages or boats which are in danger of being overset, and hence the danger of high loads on wagons, where the roads are not perfectly level. The force of gravity is not often employed directly as a mechanical agent, or prime mover. Those most frequently employed to give motion to machinery are water, wind, heat, and the strength of animals.

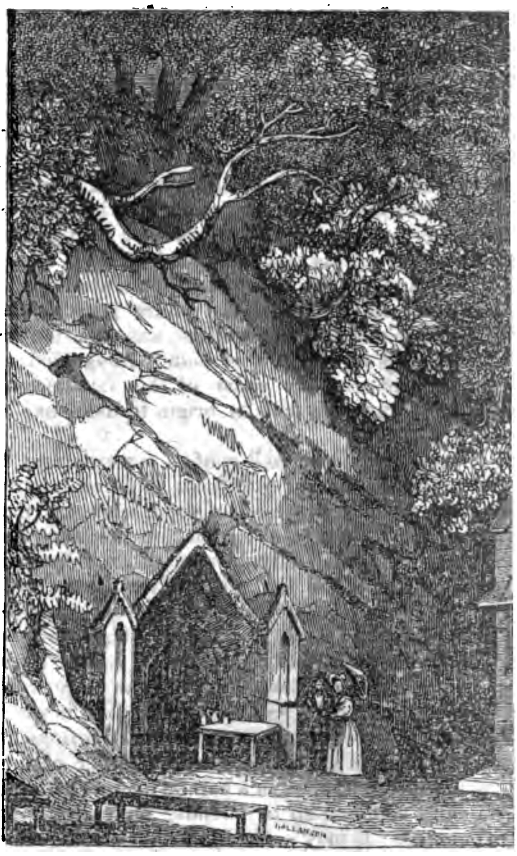
Water acts by its *weight* and by the *velocity* which it acquires from falling, in consequence of its weight. *Wind* acts by its *volume* or *mass* and its velocity. Both these agents are variable, and both act in a straight line. *Heat,* as given out by combustible materials, produces steam or gas, or gives motion to air by making it lighter, and thus causing it to rise. The steam or gas, when formed, has a tendency to expand itself, presses against the sides of the vessel which contains it, and endeavours to escape with a force proportioned to the heat and pressure to which it is exposed. When allowed to escape in only one direction, it necessarily generates motion in a straight line. Steam, as usually employed, generates motion, which is alternately in one direction and the opposite. The strength of animals is commonly made to act upon some centre of resistance, by drawing, pushing, or pressing, and produces variable motions, naturally in a straight line but often in a curve. The motions or pressures produced by all these agents are capable of being compared with those produced by weights. They might all be referred to a common standard, the unit of which should be the force required to raise a given weight a certain number of feet in a given time.

The mechanical agents are employed to measure time, to move ships and carriages, to raise weights, to shape wood and work metals, to overcome the resistance of air, of water, and of cohesion, to draw out and form materials, and to combine them into new fabricks. To apply them to accomplish any one of these effects, requires the intervention of some mechanical contrivance. Such a mechanical contrivance, whether consisting of a few or of many parts, is called a *machine.* A machine has been defined, "a system of bodies, fixed or moveable, so connected together that a movement impressed on one of them shall be transmitted to the others." The object of a machine is often vaguely supposed to be to produce or augment power. It can never have this effect. The resistance of the fixed and the friction of the moveable parts will always consume a part of the power of the prime mover. The real object of every machine is to increase or diminish the velocity of the moving force, to change its direction, to accumulate its action and expend it at a single effort, to distribute the force among a great number of small resistances, or to divide the force of a resistance so that it may be overcome by a series of actions, or by the continued action of the moving power. A machine may combine the action of several movers, and employ one to regulate the others, so that the final effect shall be perfectly uniform. The pendulum, the governer, and the fly-wheel are employed for this purpose.

[The mechanical *powers* in our next.]

"Disappointments sink the heart of man, but the renewal of hope gives consolation."

"Self-preservation is the first law of nature."



THE SYBIL'S CAVE—HOBOKEN.

THE above engraving represents one of the cu osities of the far-famed Hoboken, opposite the ci of New York, denominated the "Sybil's Cave."

It is an excavation into the solid rock of abo thirty feet. The front is fashioned in the Gothi style, as will be seen by reference to the engravir A short distance inside the cave, is a spring of wat slightly impregnated with magnesia.

Two years ago, Hoboken was one of the mc romantick places in the country. Situated on t banks, and overlooking the mighty Hudson, the b and harbour, and city of New York, and laid out beautiful and shaded walks, varied by nature and l art—it had become the favourite resort both of tl citizens and visiters to the "commercial emporiun

It still retains some of its beauties and ornamen but the hand of the spoiler has been there. O *thousand dirt-carts* are employed, in destroying i verdant lawns—turning them into "city lots." A its quiet and romantick retreats are soon to give w to the sound of the hammer and the axe.

It may be that these improvements are much nee ed, and that the island of Manhattan, is not lar enough for all the stores that may be wanted, b we could have wished the speculators had chose some other place than Hoboken, for these *improv ments.*

POPULAR MEDICAL OBSERVATIONS.

EFFECTS OF EARLY GLUTTONY.

The influence of the physical over our moral nature is at no time so strong as during the period of infancy and childhood. A suffering child is necessarily a cross one; pain is accompanied by restlessness and crying—protracted disease by peevishness and ill-nature. This is a commonplace truth, admitted by all, and yet the inductions from it are neglected by nearly all. Parents, the natural guardians of their children's health and welfare, are often the immediate agents in the ruin of both. Misguided affection is sometimes the cause of this fatal errour, which more generally has its origin in indolence of character.

For the present we shall confine our strictures to the common practice of gratifying children in their calls for any and every kind of food, whatever may be the constitution of the former, or the nature of the latter. The instinctive wants of an infant are manifested during the first year of its life by restlessness and cries. Of these wants, the strongest is, without doubt, that of nutriment. The desire of motion is also very early developed; hence if the new being be girt and bound up, so as to be prevented from freely dilating its chest and turning in every direction, it suffers, and evinces its sufferings by cries. Extremes of temperature, whether of heat or cold, impress it, also, in a painful manner; breathing a close confined air is attended with similar inconvenience. It may suffer from laborious digestion and all its concomitants. Diversified as are these causes of infantile uneasiness, without supposing actual disease, which often exists unknown to, and unsuspected by, the mother, this tender but often mistaken parent has recourse invariably to the same method of quieting her child. This is by putting it to the breast. If the uneasiness have proceeded from hunger, it is pacified; and, even in most cases, for a short period, soothed by this means. But if any of the other mentioned causes distress it, the agitation and cries are renewed, to be suspended for a few minutes in the same way as before. Each new trial becomes, however, not only less successful, but actually a fresh cause of disturbance. To be extricated from heavy bedclothes at night, or its wearing a loose dress in the day—an occasional extra tepid or warm bath—a slight change in the temperature of the nursery or bed-room, or the introduction of fresh air, would, each and severally, often assuage and remove the pain and distress of the young being, which are only aggravated by forcing beyond its real wants the functions of the stomach. The impatience from thirst is not unfrequently confounded with that of hunger, and milk is given when a spoonful of pure water would be the most acceptable and tranquillizing.

The above is, however, a course of venial errours, compared with a continuance of the system, when food of a mixed and heterogeneous nature is given to the child. Its passively swallowing whatever pap or posset is put into its mouth is mistaken for a real fondness for these substances. Its cries are choked now, as in the first stage of its existence, by food, and that not always of the most appropriate quality. The treatment is the same whether it be hurt or frightened, or peevish without any visible cause. It is stuffed with what, at suitable intervals, would, if properly selected, be wholesome nutriment; but which, given thus lavishly and frequently, is a real load, generating crudities and all imaginable distress.

In proportion as the articles of food allowed are numerous and diversified in their nature, reliance on the suggestions of the appetite of a child is diminished. We know not under these circumstances how to separate artificial wants from instinctive ones. Parents seldom give themselves any trouble in drawing the distinction: everything which is pointed out by their own prepossessions, the suggestions of visiting friends, or the whims of the child, is too often allowed to this latter. When crammed, it is fretful and capricious; and it is still further crammed to sooth its fretfulness and capriciousness.

Parents always bemoan the pitiable condition of their sick children, and yet by a strange contradiction of human nature, they will often turn a deaf ear to all the advice which is given to prevent this unhappy condition of things. The delay of a single minute on the part of a physician to visit their little darling, and his calmness in the sick room, that he may the better discharge his duty, are bitterly exclaimed against, as evidence of a want of the feelings of humanity. What is to be said to those whose culpable indulgence brought on the disease, by their wilfully going in direct opposition to the counsel of the very physician whom they now censure? They were cautioned and urged by every variety of argument and appeal to withhold the cause of disease—gross and improper food. The penalty of neglect of the injunction was clearly and explicitly pointed out. They choose to run all hazards, and and as effectually poison the child as if arsenick or henbane had been administered. Have parents who thus fearfully injure their children no foresight in their love! Must this feeling be so entirely animal as not to extend beyond the moment of present impulse! We cannot, after all, but think that there is more waywardness of purpose than genuine affection in those persons who, by indulging the pleasure of the palate of their children, directly cause or throw their bodies open to a long catalogue of diseases. Where, we would ask, is the exhibition of parental love in allowing their children to have their skins disfigured by eruptions and sores, their eyes and ears inflamed, their necks studded with swellings or hideous ulcers? All these, as well as the slow wasting of the body and the exhausting cough, might have been prevented by giving simple food, and withholding unusual provocatives of appetite. We are aware that these are, to many, unpalatable truths; but if they be the means of saving a single life, and of preserving to a widowed mother her only child, we shall not regret having given them utterance.

The moral effect of pampering the appetite of children by unceasing indulgence, is most melancholy. Is the mother afraid of an explosion of passion, a bribe in the shape of a cake or tart, is promised as a peace-offering to the little body. Does it annoy a whole company by its cries or boisterous and ill-timed pranks, it is persuaded to be quiet by the promise of some sweetmeat or extra indulgence at the next meal. If it has been good, as the phrase is, and learned its letters, the reward is still something for the stomach. Eating is soon regarded as the chief end and object of life by a child who sees no other incentive to good behaviour held out to it. A premium would truly seem to be given for gluttony. The use of the other nobler senses and of the faculties of the mind—the early cultivation of the kindlier feelings of our nature, generosity, disinterestedness, pity, filial love, are all overlooked and postponed, in favour of the one sensual, selfish, and absorbing act of gormandizing.

Deceit and a disregard of the admonitions of age and experience are unintentionally taught to children, when they hear such language as the following, addressed by a well-meaning guest to the mother:—"Just a little bit, ma'am, to cheat the doctor"—and suiting the action to the word, he puts on the plate of the dear little pet a small portion of dried beef or fish, or tart, or cake, or apple—happy escape if he does not put a glass in its hand, and let it amuse the company by sipping some wine. Ought parents who wink at, or themselves commit, such indiscretions, be surprised at their favourite son in afterlife, postponing all prudential considerations, and the suggestions of his better judgement, for the gratification of present appetite and passion. The man is here merely carrying into effect the lessons which the child received.

CONFESSIONS OF AN ENGLISH GLUTTON.

This is the title of an essay in "Traits of Travel," from which we extract the following picture; too true, unhappily, in its general outlines, though given by its lively author in a somewhat exaggerated style of colouring:—

"My father was a plain sort of a man—liked plain speaking, plain feeding, and so on. But he had his antipathies—and among them was roast pig. Had he lived to our times, he might probably have been won over by a popular essay on the subject, which describes, in pathetick phrase, the manifold delights attending on that dish—the fat, which is no fat—the lean, which is not lean—the eyes melting from their sockets, and other tender touches of description. Be this as it may, my unenlightened parent would never suffer roast pig upon his table; and so it happened, that, at sixteen years of age, I had never seen one. But on the arrival of that anniversary, I was indulged by my mother with a most exquisite and tender two-months porker, in all its sucking innocence, and succulent delight, as the prime dish in that annual birthday feast, to which I was accustomed—in my own apartment—all doors closed—no ingress allowed—no intruding domesticks—no greedy companions to divide my indulgences—no eyes to stare at me, or rob me of a portion of the pleasure with which I eat in, as it were, in vision, the spirit of every anticipated preparation, while savoury fragrance was wafted to my brain, and seemed to float over my imagination in clouds of incense, at once voluptuous and invigorating. Ah, this is the true enjoyment of a feast! On the present occasion, I sat in the full glory of my solitude—sublimely individual as the Grand Lama of Thibet, or the brother of the Sun and Moon. The door was fastened—the servant evaporated—a fair proportion of preparatory foundation—soup, fish, &c., had been laid in *secundem artem*—the *mensa prima* in short, was just despatched, when I gently raised the cover from the dish, where the beautiful porker lay smoking in his bright brown symmetry of form and hue, enveloped in a vapour of rich deliciousness, and floating in a gravy of indescribable perfection! After those delightful moments of dalliance (almost dearer to the epicure than the very fulness of actual indulgence,) were well over—after my palate was prepared by preliminary inhalements of the odorous essence—I seized my knife and fork, and plunged *in medias res*. Never shall I forget the flavour of the first morsel—it was sublime! But oh! it was, as I may say, the last; for losing, in the excess of over-enjoyment, all presence of mind and management of mouth, I attacked without economy or method, my inanimate victim. It was one of my boyish extravagances to conform myself in these my solitary feasts to the strict regulations of Roman custom. I began with an egg, and ended with an apple, and flung into the fireplace (as there was no fire, it being the summer season,) a little morsel, as an offering to the *dii patellarii*. On this occasion, however, I forgot myself and my habits—I rushed, as it were, upon my prey—slashed right and left, through crackling, stuffing, body, and bones. I flung aside the knife and fork—seized in my hand the passive animal with indiscriminate voracity—thrust whole ribs and limbs at once into my mouth—crammed the delicious ruin by wholesale down my throat, until at last my head began to swim—my eyes seemed starting from their sockets—a suffocating thickness seemed gathering in my throat—a fulness of brain seemed bursting through my scull—my veins seemed swelled into gigantick magnitude—I lost all reason and remembrance, and fell, in that state, fairly under the table.————

"This, reader, is what we call, in common phrase, a surfeit. But what language may describe its consequences, or give a just expression to the sufferings it leaves behind? The first awakening from the apoplectick trance, as the lancet of the surgeon gives you a hint that you are alive, when the only taste upon the tongue—the only object in the eye—the only flavour in the nostril, is the once-loved, but now deep-loathed dish! The deadly sickening with which one turns, and twists, and closes one's eyelids, and holds one's nose, and smacks one's lips—to shut out, and stifle, and shake off the detested sight, and smell, and taste:—but in vain, in vain, in vain! But let me not press the point. Forty-two years have passed since that memorable day.—forty thousand recollections of that infernal pig have flashed across my brain, and fastened on my palate, and fumigated my olfactories; and they are, every one, as fresh—what do I say!—a million times more fresh and intolerable than ever! Faugh! It comes again."

INSUFFICIENT EXERCISE.

He who does not spend several hours every day in some active exercise—as walking, riding on horseback, or in some amusement which calls nearly all the muscles into play, must inevitably suffer from a diminution of bodily strength, defect of appetite, and imperfect digestion, and becomes sooner or later the subject of disease.

THE CHANGES OF FORTUNE.

The following tale illustrates one of the many instances of distress among the poor *seamstresses* of New York and the lady who communicated it for publication in the Mirror vouched for its authenticity.

"Do you give out work here?" said a voice, so soft, so low, so ladylike, that I involuntarily looked up from the purse I was about purchasing for my darling boy, a birthday gift from his papa.

"Do you give out work here?"

"Not to strangers," was the rude reply.

The "stranger" turned and walked away.

"That purse is very cheap, ma'am."

"I do not wish it now," said I, as taking up my parasol, I left the shop, and followed the stranger lady.

Passing Thomson's, she paused—went in—hesitated—then turned and came out. I now saw her face—it was very pale—her hair black as night was parted on her forehead—her eyes, too, were very black, and there was a wildness in them that made me shudder. She passed on up Broadway to Grand street, where she entered a miserable looking dwelling. I paused—should I follow farther!—She was evidently suffering much—I was happy—blessed with wealth, and, oh, how blessed in husband, children, friends!—I knocked—the door was opened by a cross-looking woman—

"Is there a person living here does plain sewing?" I inquired.

"I guess not," was the reply. "There is a woman upstairs, who used to work, but she can't get no more to do—and I shall turn her out to-morrow."

"Let me go up," said I, as, passing the woman with a shudder, I ascended the stairs.

"You can keep on up to the garret," she screamed after me—and so I did; and there I saw a sight of which I, the child of affluence, had never dreamed! The lady had thrown off her hat, and was kneeling by the side of a poor low bed. Her hair had fallen over her shoulders—she sobbed not—breathed not—but seemed motionless, her face buried in the covering of the wretched, miserable bed, whereon lay her husband. He was sleeping. I looked upon his high pale forehead, around which clung masses of damp, brown hair—it was knit, and the pale hand clenched the bedclothes—words broke from his lips—"I cannot pay you now," I heard him say. Poor fellow! even in his dreams, his poverty haunted him! I could bear it no longer, and knocked gently on the door. The lady raised her head, threw back her long black hair, and gazed mildly upon me. It was no time for ceremony—sickness, sorrow, want, perhaps starvation, were before me—"I came to look for a person to do plain work" was all I could say.

"Oh, give it me," she sobbed. "Two days we have not tasted food!—and to morrow ——. She gasped and tried to finish the sentence, but could not. She knew that to-morrow they would be both homelesss and starving!

"Be comforted—you shall want no more!"

I kept my word. In a few days she told me all—of days of happiness in a sunny West Indian isle, her childhood's home. Of the death of her father and mother—of a cruel sister and brother-in-law—how she left that home, hoping to find a brother in America—how she sought in vain, but found, instead, a husband—he too, an Englishman, a gentleman and scholar, had been thrown upon the world. Sympathy deepened into love—alone in a crowd, all the world to each other, they married—he procured employment in a school, she plain needlework. Too close attention to the duties of his school, long walks, and scanty fare, brought ill health and confined him at length to his bed.

The shop, from which his poor wife obtained work, failed, and their resource was cut off. She had looked long, weary days for employment—many had none to give—others "gave no work to strangers." Thus I found them—to comfort them for a little time—then I trust, they found indeed a Comforter in heaven!

The husband died first—died, placing the hand of his poor wife in mine! I needed not the mute, appealing look he gave me; I took her to my own happy home—it was too late!

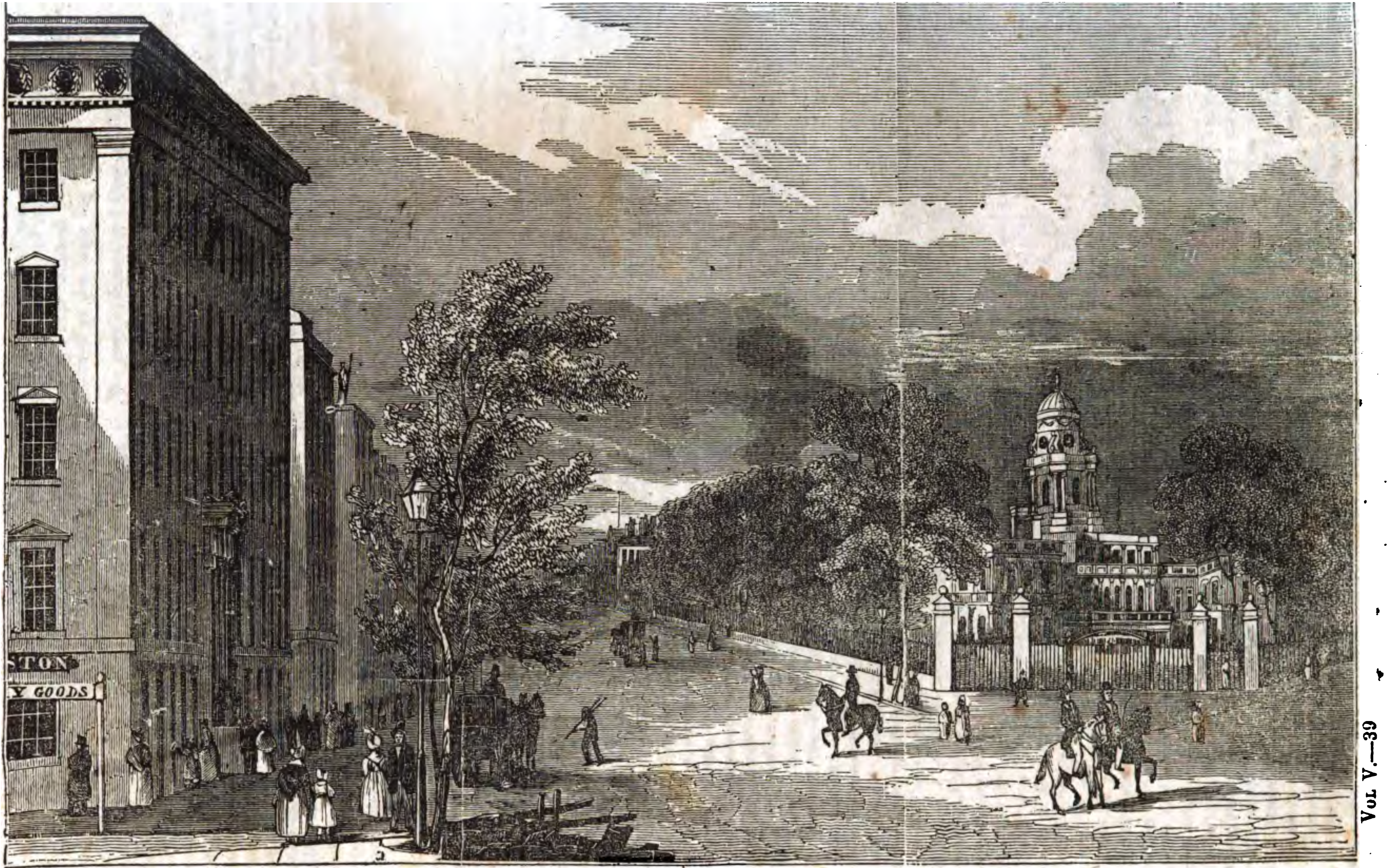
It is a very little time ago, I went one morning to her room; she had passed a restless night; had dreamed she said of her dear George—she called me her kind and only friend—begged me to sit a little while beside her, and looked up so sadly in my face, that my own heart seemed well nigh breaking I left her not again.

In the still deep night I heard her murmur—"Sister Anne, do not speak so harshly to me! Oh, mam—ma, why do you leave me?" Then again she said, "Give me an orange, my sister, I am very faint." Her soul was again in her own sunny home.

"Lay me by my George, and God will bless you," were her last words to me. I led my hushed children to look upon her sweet pale face, as she lay in her coffin. They had never seen sorrow or death, and then I gave them the first knowledge of both; then I told them of the sin, the cruelty, of those who wound the "stranger's" heart.

"Out of Debt out of Danger" is the motto and title of one of Maria Edgeworth's moral tales. It should be never out of mind, and always in practice. The most humiliating and uncomfortable situation in the world, is that of the person who is in debt, and sensible of his present inability to escape the thrall. To such it is unnecessary to talk; but parents should make the sentiment at the head of our paragraph the basis of all instruction upon matters of worldly policy. The young man who has health, a good salary, or even an indifferent one, should have no burden of little debts or large, unpaid, upon his memory. He should always take care also, to keep a shot in the locker, against contingency. To have one's income suddenly withdrawn is bad enough, but when, in addition, there are sundry arrearages of back debts, all of which will be sure to torment him upon the least appearance of inability to pay, is the most unsettled posture of affairs a poor devil can get into. N. Y. Star.

"Those things are to be cherished which tend to elevate us above our ordinary sphere, and to abstract us from our common and every-day concerns. The affectionate recollection and admiration of the dead will act gently upon our spirits, and fill us with a composed seriousness, favourable to the best and most honourable contemplations."



View in Broadway.

VIEW IN BROADWAY.

The accompanying view is from the corner opposite St. Paul's Church, looking towards the north, and takes in the Astor-House, the American Hotel, &c., &c., on the one side; and the Park, with its stately trees, and the City Hall on the other.

The Astor House. "This house is situated in Broadway, and occupies the block between Vesey and Barclay streets, opposite the Park. Its front on Broadway is about two hundred feet, and is one hundred and fifty feet on Barclay and Vesey streets. The exteriour is of Quincy granite. It is five stories in height. The wings of the building form a hollow square, the yard being in the centre—so that the rooms on all sides receive light and air from the streets and centre. The lower story of the building is occupied by stores; they are fifteen in number, ten on Broadway and five on Vesey and Barclay streets. The main entrance to the hotel is in the centre of the building on Broadway; it has also entrances on the other streets abovenamed. The main entrance opens to a splendid vestibule, supported by columns, the floor of which is of Mosaick work, of blue and white marble. The gentlemen's dining-room is one hundred by forty feet, with a ceiling nineteen and a half feet high. The ladies' dining-room is sufficiently capacious to seat one hundred ladies. The ladies' drawing-room is richly and elegantly furnished with Brussels carpeting, marble tables, ottomans, sofas, and chairs, of splendid workmanship and costly materials. The rooms throughout are furnished in a simple but beautiful style. With the exception of two or three rooms, the sofas, bureaus, tables, bedsteads, chairs, &c., are made of black walnut, which has a rich and substantial appearance, and receives a polish like mahogany. The hotel is lighted with gas, and there are water-closets attached to each suite of rooms.

The kitchen occupies a room on one of the wings. The arrangements for roasting, frying, boiling, &c., are upon the most approved methods, the cooking being done by steam. The cooks are all French. A baker is employed for the house. Under the kitchen is a spacious washing-room and room for ironing and drying clothes by heat from steam. There are seventeen bathing-rooms and two shower-baths; the water for their supply comes from cisterns or reservoirs in the attick of the building, conveyed below by leaden pipes to all the rooms of the building. By a force-pump, water is also distributed through all the rooms. By the multiplication of stationary wash-tubs, and the power of steam, clothes may be washed, dried, and ready for use, *in half an hour after they are given out.* The drying process is accomplished in five minutes, by spreading the clothes on wooden horses, running on railroads, and lead into a large close apartment heated to a very high temperature by steam. A rotary steam-engine pumps water, supplies steam to the kitchen, wash-room, &c.; cleans the knives and forks, boots and shoes, and has in reserve power enough for other uses.

There are three hundred and eight rooms for boarders. Whole number of rooms three hundred and ninety. The yard is flagged throughout. The water from the kitchen is carried off by a sewer into the North river. The furniture cost *ninety thousand dollars*, including about eight thousand dollars worth of silver, and ten or twelve of plate ware. *Eighty servants* attend on the establishment. In the house are four hundred locks, no two of which can be opened by the same key."

We extract from the "Craven Sketches," one entitled a "Walk in Broadway."

"Broadway, however, is a very fine street, the longest, it is said, in a direct line, in the world. There is not any thing particularly splendid in it, and the stores, in general, are neither large nor elegant, with an unseemly disproportion of lottery offices among them; but the almost unbroken line of respectable houses, neatly painted, and shaded by lofty trees, gives it an air of substantial comfort, and at the same time of lightness and freshness, highly desirable. It is pleasant to stroll along it; or, indeed, the principal street of any large city. What a motley group of beings—alike, yet how different—are daily pressing and hurrying over its pavements! What a multiplicity of hopes, and fears, and petty plans, and lofty schemes, are unceasingly fermenting in the bosom of every individual that moves along the narrow footwalks! Yet it is not the variety of human passions that makes the wonder, for joy and sorrow, love and hate, pride, vanity, interest, and ambition, are common to all; but the endless combinations formed by those passions according to the different degrees in which they preponderate and act on different individuals, and on the same individuals in different situations. Take up an arithmetick, and ten simple figures form the ground-work; yet how many million combinations, and no two alike, can be created by these ten figures. So it is with man and his concerns. And still, despite the individual variety, what a general sameness prevails. The hopes, and cares, and joys, and sorrows of one day are like the hopes, and cares, and joys, and sorrows of the next; and the same drama that is hourly felt and acted in the streets of New York, is playing with equal animation amid the wealth and smoke of London, and the sunshine and poverty of Naples—the gravity of Madrid, and the gayety of Paris. Two thousand years ago, the "eternal city" had her belles and beaux, her flirts and dandies (a Roman dandy!)—and two thousand years hence, or less time, will the cannibals of New Zealand have eschewed war-dances and raw victuals, and have their blue-stocking tea-parties, biscuit and lemonade *soirées*, French cooks, and fashionable quadrilles, as well as anybody. All is still

> "The everlasting to be, that hath been;"

and the probability is that the antediluvians wrote poetry, told lies, wore whiskers, and cheated their neighbours, just as we do now.

It is also pleasant, as well as curious and profitable, in roaming through a large city, to contrast its present with its former situation—to compare what it has been with what it is, and to speculate on what it may be. New York, to be sure, is not rich in historical recollections, for she is comparatively a thing of yesterday. In walking her streets, we do not feel as in the ancient capitals of Europe, that our footsteps, perchance, fall on the very places where those of the mighty dead have fallen before us. In the older streets of London, we know that we are walking where Richard, Duke of Gloucester, "high-reaching Buckingham," or Harry Hotspur, actually walked, and that Shakspeare and Milton familiarly trod even where we then tread; or the High street of Edinburgh—where the Leslie and the Seyton, the Gordon, and the Douglas, were wont foolishly and gallantly to stab and dirk each other for the "crown o' the causeway." True, all is now commonplace and familiar; the merchant plods homeward with his umbrella under his arm, instead of his rapier by his side. But great as the change is there from the past to the present, it has still been gradual. Step by step have they toiled their way from barbarism to civilization. Here, it has been as the shifting of the scenery in a play, rather than sober reality. It is but as the other day when the forests flourished where now "merchants most do congregate," and the streamlet murmured where the gin-shop stands. The council-fires blazed and the sachems spoke to their young men where now the honourable Richard Riker and the honourable the corporation hold "long talks" about small matters. The wigwam sent its tiny wreaths of smoke into the clear air, where now the bank coffee-house pours forth volumes of odoriferous steam to mingle with the masses of vapour that overhang the city like a cloud; and its tables groan with "all the delicacies of the season" where the deer from the wood and the fish from the stream, were cooked and eaten without the aid of pepper and salt—two of the greatest blessings of civilization.

And not more different than the scenes were the actors concerned in them. Step aside, good reader, and mark them as they now pass along Broadway. The first is one but little known to Indian life—one who lives by the folly and roguery of the fools and rogues around him—a lawyer. He is clad in solemn black, as if that were ominous of the gloom which follows in his train. What would the Indian, with his untaught natural sense of right and wrong, think of this man's "quiddets, his quillets, his cases, his tenures, and his tricks;" and of "his statutes, his recognizances, his fines, his double vouchers, and his recoveries?" Alas! the poor Indian has but too deeply felt his power and the power of his brethren in the modern "black art." They conjured away his pleasant haunts, "under the greenwood tree," his silver streams teeming with life, his beautiful lakes and fair hunting-grounds, all "according to law," and left him a string of beads and a bottle of fire-water, a bruised heart and a broken spirit in their place. Here comes another product of the present times, neither rare nor valuable, indigenous to Broadway, and flourishing there in peculiar rankness; a modern Sir Fopling Flutter, of whom it may well be said with the poet,

> "Nature disclaims the thing—a tailor made him!"

Mark with what affected effeminacy the full-grown baby lounges along, and the air of listless indifference or slightly awakened surprise with which it is his pleasure to regard a fine woman; but what indeed, are all the women in the world to this caricature of manhood, in comparison with his own sweet self? Anon, another variety of the same genus appears, quite as contemptible, not so amusing, and a great deal more disagreeable. This is your ruffian-dandy; one who affects a dashing carelessness in his dress and deportment, wears good clothes in a very ill fashion, and has generally a checked shirt, a sailor's hat, or some other article of dress sufficiently different from the ordinary costume of those around him to render him an object of notoriety. Mark the easy dignity of that swagger as he rolls along, staring impudently at all the women and frowning valiantly at all the men, as if he expected every moment to be insulted, and was afraid his courage might not be screwed up "to the sticking point." A sort of personage not unlike Mike Lambourne in Kenilworth, allowing for the modifications of the times. But lo! what comes next—dame nature's loveliest work, a woman; but, heaven and earth! how the mantua-maker has spoiled her! Why, what frippery have we here? Silks and lace, ribands and gauze, feathers, flowers, and flounces! Not but that these are all excellent things in their way, when judiciously used; but to see them all clustered, as in the present instance, on one woman at one time, is what the proverb states to be "too much of a good thing," or what the poet terms "wasteful and ridiculous excess." Then look at those sleeves* in which her arms are lost, and that acre of hat upon her head, with a sufficiency of wheat ears and flowers on it, were they real, to feed a family or stock a garden. And see! as far as the eye can reach it rests on colours as varied and fantastical as the butterflies in summer or the leaves in autumn, in which the *dear* creatures have arrayed themselves. Oh, matrimony, matrimony! thou art indeed becoming a luxury in which the rich and opulent alone will be able to indulge. Nine small children might be supported, but to deck out one of Eve's daughters in this fashion three hundred and sixty-five days in the year, is what nothing but a prize in the lottery or a profitable bankruptcy is equal to. Still on they pass in throngs: the grave and thoughtful student, abstracted from all around, building up his day-dream of fame, fortune, and beauty, and then in love with the cunning coinage of his own brain; and the rich old merchant, not in love with any thing but still in raptures, for cotton has risen an eighth. On they pass, the whiskered Don, the sallow Italian, the bulky Englishman, and the spare Frenchman, all as eager (as a professed moralist might say) in the pursuit of business and pleasure, as if enjoyment were perpetual and life eternal; and all this where, but a little while ago, the wolf made his lair, and the savage his dwelling-place. Verily, as a profound German philosopher acutely though cautiously observed—"Let a man live long enough, and it is probable he will see many changes."

WAVES.

The depth to which the sea is agitated, even in violent tempests, is not very considerable; at the depth of twenty feet below what is the level in a calm, the effect is very slight, and at thirty feet it would probably be altogether imperceptible. It may therefore seem difficult to account for the mountainous waves encountered by seamen; but it must be remembered, that the wind is constantly acting, and that one wave is raised on the surface of another, till the accumulation becomes prodigious.

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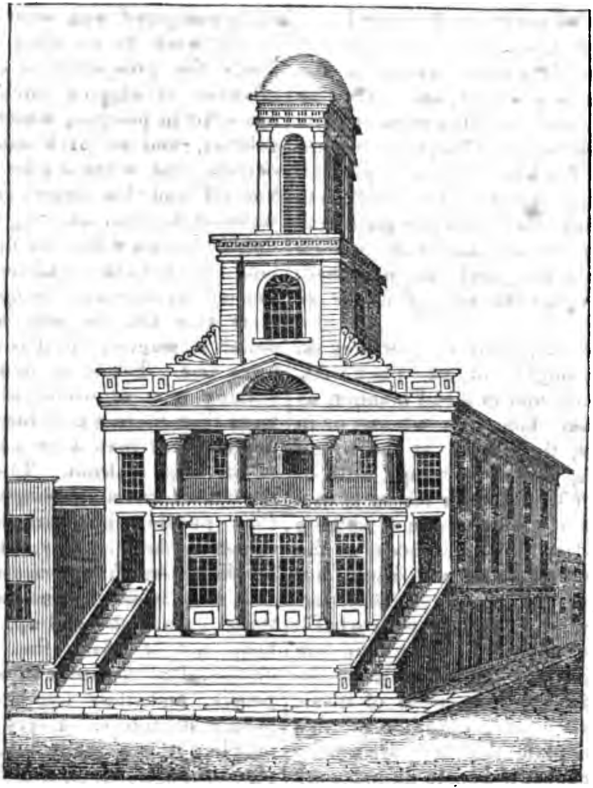
* The reader will perceive this was written several years ago.



[Buffalo Postoffice.]

BUFFALO POSTOFFICE.

The city of Buffalo is situated on the east end of lake Erie, at the head of the Niagara river, of the great Erie canal, and at the mouth of Buffalo creek. It is a city of rapid growth, and of extensive trade. Splendid stores occupied and filled with goods tastefully displayed at the windows—blocks of new stores and other buildings going up—steamboats arriving and departing, crowded with passengers, and loaded with freight—omnibuses rolling through the thronged streets—all these seem to impress one with the idea that he is in the heart of one of the great Atlantick cities.

Among the public buildings the postoffice is worthy of attention. It is situated on the corner of Washington and Seneca streets in the old Baptist church. O. H. Dibble, postmaster, H, Case, assistant.

The first mail ever received here was in March, 1803. It was brought from the east on horseback. It was afterward brought regularly, once in two weeks, in this manner; subsequently a stage-wagon was used. As the country advanced in improvement, the route was changed to twice and three times a week, and finally to a daily route.

There are at the present time, sixty-six mails per week received, made up, and despatched from this postoffice.

The amount of postage on letters received for distribution is $40,000 per quarter. The amount received for, and delivered in the city alone, is $5,900; which together with the amount charged on letters mailed there, makes the amount of business annually about *two hundred and sixteen thousand one hundred dollars.*

PUMICE-STONE.

Pumice-stone is a substance frequently thrown out of volcanoes, and which is found of considerable use in the arts. It is very full of pores, and resembles the frothy slag produced in our iron furnaces. It is of two colours, black and white, the former being that which it has when thrown out of the volcano, the latter, as Cronstedt conjectures, being produced by exposure to the air. M. Majellan considers it rather as a volcanick ejection than a volcanick production; and describes it as of a white, reddish-brown, gray, or black colour. It is of a rough and porous consistence, being made up of slender fibres parallel to each other, and very light, so that it swims on water. It strikes fire with steel, though with difficulty. A hundred parts contain from six to fifteen of magnesia, with a small proportion of calcareous earth, and the greatest part silex. Another kind of pumice, which seems to be a ferruginous granite altered by fire, was discovered by Dolomieu at Stromboli.

Pumice-stone is used for rubbing and smoothing the surface of metals, wood, pasteboard, and stone. It cuts most bodies rapidly when rubbed with water.

CAUSES OF POVERTY.

[From Sedgwick's Publick and Private Economy.]

It appears, from what has already been proved, that *labour* is the cause of all the wealth in the world, or nearly all. It is admitted, and every one knows, from common observation, that in most parts of the earth, *labour* may be made to produce more than it does at present. We know, *that it is possible* to turn the whole earth that can be cultivated; into garden ground. It is plain, then, that the great reason why there is not more wealth, and why, in such large portions of the world, the people are wretched, and not comfortable, is, either the *want of labour, or the right sort of labour*.

Either then, 1st, The people are idle, or they do not work as hard as they might; or, 2d, They work unskilfully, with poor tools, and in a bad manner, as savages do; or, 3d, Their labour is wholly, or in part, misapplied—that is, they work at the wrong things, and their labour, therefore, brings little or nothing to pass; in other words, their labour is in a great measure unproductive, yielding little or nothing of UTILITY, of real good to the great body of the people; it produces neither food, nor drink, nor clothes for the body, nor any real, delightful, desirable pleasure to the mind, compared with what it might produce. As was suggested before, there are thousands and thousands that do not produce the means of living. On the contrary, some of these, in the way in which they live, consume all that thousands produce. It is plain, that here are causes enough for poverty; because, if people do not work to produce what they want, and what it is best for them to have, how can they avoid being poor and miserable? It is this unprofitable labour, that brings nothing or little to pass, that I shall principally here consider.

This, then, solves the whole mystery, if there be any mystery about the matter, why bad government, bad religion, superstition, monopoly, make the people poor and miserable; and it is that where these exist the people work to a disadvantage. They are compelled to labour for the king, for the nobility, for the priesthood, for the great men who have the monopolies, in ten thousand contemptible, frivolous, and unprofitable occupations, which are attended with little or no real permanent good to the labourers. This explains the unexampled prosperity, riches, and *happiness* of large portions of the United States, compared with other countries, that is, that the labourers here are permitted to work for their own benefit, to work for *property*, at such occupations as are useful to themselves, and thus to enjoy the produce of their labours. Happiness, then, is one great cause of labour and wealth, as surely as that misery, discontent, and despair are causes of idleness and poverty. And this is the reason why the slave is such a miserable labourer compared with the white man.

The prosperity of individuals depends in a great measure upon the *utility* of their occupations, and as individuals make up nations, those nations will be the richest and happiest where the *useful occupations prevail*. One of the great reasons, then, why there is so little property in the world, and why there are so many poor people, and why those who are not absolutely poor are far less well off than they might be, is, that so many men, women, and children, labour without bringing anything to pass, or any thing compared with what they might bring to pass. Many work to no more advantage, so far as regards the prosperity of the whole, than if they laboured at digging ditches and filling them up again, or in pumping water out of one cistern into another, and so back again for ever. Now, it is certain, that when a poor man is hired to disgrace himself and his employer, by such a disgusting waste of his time as this, though the poor man may thereby earn a dollar, he does not in any way, in the long-run, help the condition of other poor men like himself, by *increasing property* for the general good. It is true that he may help himself by gaining a dollar in wages; but it is as true that another man loses one. Between them both they have created nothing new or useful, of course nothing remains more than there was before. About thirty years ago, nearly every man wore a little silk tassel at the top of his boot, in front. The boot was property, but the tassel was a contemptible appendage of a man. Poor people who work for small wages, can find something better to lay out their money upon; it is for their interest to create PROPERTY.

It is by labouring and earning, or producing something that can be laid up, and added to the general heap, out of which the whole nation is fed and clothed, that a man can increase the wealth of the people, and thus improve the condition of poor people in future. Every child has seen a soap-bubble; it is a pretty toy. As it escapes from the pipe through which it is blown it presents the appearance, though not regular in its movements, of a little world sent into the air by the breath; it dances about for an instant, and then bursts, and disappears for ever, showing that it is but a bubble! An immense amount of labour, even in the United States is spent upon what is no better than soap-bubbles. But wheat, and rye, and cotton, and corn, fertile farms, beautiful cities, and villages, do not spring from soap-bubbles. We see every day some of the poorest of the people, who are often without bread, or meat, or comfortable clothes, occupied in manufacturing the soap, or the pipes, or in performing some of the operations of this ignoble soap-bubble business. It is plain, that these poor people had better be making shoes, hats, and coats; for it is certain, that the more of these there are in the world, the more will fall to each man's share; unless it be true, as Mr. Malthus says, that there must be more heads than hats, more backs than coats, more guests than dishes, *which is denied*.

The ends of Providence in regard to man cannot be answered in his present disgraceful state of poverty, and this is perfectly true even in the United States, the happiest portion of the world. The great body of the labourers cannot look for any substantial improvement of their condition, till they have learned to lay up their wages, to increase their substance; and thus to obtain the means of a little rest and leisure for the improvement of their minds.

In proportion as people are easy and independent, and have made some little provision for the future by laying up their wages and earnings, *are they able to work at what occupations are most for their advantage*. When people have the option it is generally found that they work at the *useful occupations*, and this accounts (as was said before) for a great portion of the present wonderful prosperity of the United States, compared with that of most portions of the world. Not wonderful, however, compared with what it might be or will be. The power of labouring where we will, and how we will, is our independence! If we have this power in the United States, why is there not more brought to pass, why are there not more useful productions, why are there so many contemptible, frivolous ones, that no wise man cares anything about; why is there so much poverty, why so many that are removed only a hair's breadth from poverty?

This is one great, and a very important reason. The labouring people do not know their own power; they have never seen it in other countries, and have never been taught it here. The great body of those who labour with their hands, make this grand mistake: they think that they are compelled by their condition, to spend their time in blowing up soap-bubbles, if the rich, who, as they say, have all the wealth, prefer this; that, as they live upon wages, they must live according to the will of others; that if the rich man, the capitalist, chooses to carry on a vicious, and of course to them, ruinous business, they have no option in the matter. Many of them, however, see and admit, that it must make an immense difference in the comfort of the whole people, whether a proportion of them are employed in ploughing, sowing, reaping, &c., another in fashioning those beautiful products that administer to the rational pleasures of all, another in healing the sick, instructing the ignorant, and spreading knowledge in the world, and so on, or whether they are occupied in blowing up soap-bubbles, in which case it is plain that these must be supported at the expense of the rest. All idle lackeys, servants, and retainers, ought in this industrious country to be called the soap-bubble blowers;—and all their employers, the idle sons of rich men, all the expensive fashionable people *who do nothing*; all the lottery people; all the gentlemen (to the honour of the country there are but few) who spend their lives in breeding and training horses to game with, indeed, all idlers, rich or poor, ought to have the exclusive honour of carrying on the soap-bubble business.

This, then, is the grand distinction of a free nation, and by far the most important. That the people have the power of producing what they choose, in other words, of using their labour as they choose, and then of spending their money, which is the product of their labour, as they choose; and it is because so much depends upon this being rightly understood, that I shall hereafter attempt to prove and illustrate it in the fullest manner.

In England, great personages sometimes hire three stout, full-grown men as footmen, to stand behind their carriages. These are clothed in rich liveries, with laced coats and hats, and receive wages for their services. The hard-working people must, of course, earn the money that pays these wages, and for the laced coats and hats. In the present condition of England it may be necessary for a portion of the poor people to get a living in this way. But this would be a contemptible employment for three able-bodied men in the United States, where there are so many productive employments, by which labourers may *increase property*. This is a specimen of the worthless occupations which consume the labour, and cause the poverty of the people.

So different is the condition of the United States from that of the greater part of the civilized world, that the labourers here are the arbiters of their own destiny, and of that of the country; they and they alone, have the power to decide what occupations there shall be, how men shall labour, in what trades, at what arts. When I say they have the power, I do not mean the power to pass laws for that purpose; but a much higher and better power, the power of becoming independent, after which men may work as they choose.

There is a large class of vicious employments—that do not simply leave the world where it was, but make its condition worse. Some of these have already been alluded to. Men who are employed in keeping and fighting game-cocks, or in training horses to game with, or who spend their time in manufacturing and selling little pieces of red or blue paper, which they call lottery tickets, are engaged in occupations, that are at once contemptible and vicious. These do not add to the general store by which the wealth of the world is increased, but they lessen it, by corrupting themselves and their fellow-citizens, and thus taking away their working faculties. The working men who follow at the heels of these horses and their gaming owners, do not understand what they are about; they have not studied their own interests.

THE SCATTERED HOUSEHOLD.

The family group is gathered,
  And all are happy there;
The cheerful glance and word pass round,
  For life with them is fair.
A full, unbroken household!
  It is a pleasant sight!
The mother's smile is sweeter then—
  The father's glance more bright.

There is another gathering,
  But one is wanting there;
The youth who sat beside his sire
  Comes not to fill his chair.
The grave-yard bears another stone—
  The miss'd one sleeps beneath—
The cheerful smile doth yet pass round,
  But thou art felt, oh Death!

Again there is a gathering,
  But where is she whose smile
Was wont to make hearts glad—
  Our father's care beguile?
In vain we list a mother's voice,
  'Tis silent in the tomb!
The happy smile is seen no more;
  Where mirth was, now is gloom.

Once more there is a gathering,
  Once more an empty space
Proclaims that death has been at work;
  To fill a brother's space.
His grave is in a distant isle,
  Made by a stranger's hand!
Oh, hard it is to die away,
  From one's own native land.

That group will never gather more
  Around that kindred hearth,
'Tis broken up—what death has left
  Are scattered o'er the earth!
And where that humble mansion stood,
  There now is not a stone
To mark the spot, or tell of those
  Who to their graves have gone.

GEORGIA SCENES.

[Another Extract.]

We give up all we know, with this number, of the adventures of our friend Ned Brace. He will be met in the following story, and here we must all take our leave of him. This volume of Georgia Scenes contains some other interesting stories, but none so full of humour as those in which Ned is the hero.

A SAGE CONVERSATION.

I love the aged matrons of our land. As a class, they are the most pious, the most benevolent, the most useful, and the most harmless of the human family. Their life, is a life of good offices. At home, they are patterns of industry, care, economy and hospitality; abroad, they are ministers of comfort, peace and consolation. Where affliction is, there are they, to mitigate its pangs; where sorrow is, there are they to assuage its pains. Nor night, nor day, nor summer's heat, nor winter's cold, nor angry elements, can deter them from scenes of suffering and distress. They are the first at the fevered couch, and the last to leave it. They hold the first and last cup to the parched lip. They bind the aching head, close the dying eye, and linger in the death-stricken habitation; to pour the last drop of consolation into the afflicted bosoms of the bereaved. I cannot, therefore, ridicule them myself, nor bear to hear them ridiculed in my presence. And yet, I am often amused at their conversations; and have amused *them* with a rehearsal of their own conversations, taken down by me when they little dreamed that I was listening to them. Perhaps my reverence for their character, conspiring with a native propensity to extract amusement from all that passes under my observation, has accustomed me to pay a uniformly strict attention to all they say in my presence.

This much in extraordinary courtesy to those who cannot distinguish between a simple narrative of an amusing interview, and ridicule of the parties to it. Indeed I do not know that the conversation which I am about to record, will be considered amusing by any of my readers. Certainly the amusement of the readers of my own times, is not the leading object of it, or of any of the "Georgia Scenes;" forlorn as may be the hope, that their main object will ever be answered.

When I seated myself to the sheet now before me, my intention was merely to detail a conversation between three ladies, which I heard many years since; confining myself to only so much of it, as sprung from the ladies' own thoughts, unawaked by the suggestions of others; but, as the manner of its introduction will perhaps interest some of my readers, I will give it.

I was travelling with my old friend, Ned Brace, when we stopped at the dusk of the evening at a house on the roadside, for the night. Here we found three nice, tidy, aged matrons, the youngest of whom could not have been under sixty; one of them of course was the lady of the house, whose husband, old as he was, had gone from home upon a land-exploring expedition. She received us hospitably, had our horses well attended to, and soon prepared for us a comfortable supper. While these things were doing, Ned and I engaged the other two in conversation; in the course of which, Ned deported himself with becoming seriousness. The kind lady of the house occasionally joined us, and became permanently one of the party, from the time the first dish was placed on the table. At the usual hour, we were summoned to supper; and as soon as we were seated, Ned, unsolicited, and most unexpectedly to me, said grace. I knew full well that this was a prelude to some trick, I could not conjecture what. His explanation (except so much as I discovered myself) was, that he knew that one of us would be asked to say grace, and he thought he might as well save the good ladies the trouble of asking. The matter was, however, more fully explained just before the moment of our retiring to bed arrived. To this moment the conversation went round between the good ladies and ourselves, with mutual interest to all. It was much enlivened by Ned, who was capable, as the reader has been heretofore informed, of making himself extremely agreeable in all company; and who, upon this occasion, was upon his very best behaviour. It was immediately after I had looked at my watch in token of my disposition to retire for the night that the conversation turned upon marriages, happy and unhappy, strange, unequal, runaways, &c. Ned rose in the midst of it, and asked the landlady where we should sleep. She pointed to an open shed-room adjoining the room in which we were sitting, and separated from it by a log partition, between the spaces of which might be seen all that passed in the dining-room; and so close to the fireplace of this apartment, that a loud whisper might be easily heard from one to the other.

"The strangest match," said Ned, resuming the conversation with a parson's gravity, "that ever I heard of, was that of George Scott and David Snow; two most excellent men, who became so much attached to each other that they actually got married"——

"The lackaday!" exclaimed one of the ladies

"And was it really a fact?" inquired another.

"Oh yes, ma'am," continued Ned, "I knew them very well, and often went to their house; and no people could have lived happier or managed better than they did. And they raised a lovely parcel of children—as fine a set as I ever saw, except their youngest son, Billy: he was a little wild, but, upon the whole, a right clever boy himself. Come, friend Baldwin, we're setting up too late for travellers." So saying, Ned moved to the shed-room and I followed him.

The ladies were left in silent amazement; and Ned, suspecting, doubtless, that they were listening for a laugh from our chamber, as we entered it, continued the subject with unabated gravity, thus: "You knew those two men, didn't you?"

"Where did they live?" inquired I, not a little disposed to humour him.

"Why, they lived down there, on Cedar creek, close by Jacob Denman's—Oh, I'll tell you who their daughter Nancy married—She married John Clarke—you knew *him* very well."

"Oh yes," said I, "I knew John Clarke very well. *His* wife *was* a most excellent woman."

"Well, the boys were just as clever, for boys, as she was, for a girl, except Bill; and I never heard any thing *very* bad of him; unless it was his laugh ing in church; that put me more out of conceit of him than any thing I ever knew of him———Now, Baldwin, when I go to bed, I go to bed *to sleep*, and not to talk; and, therefore, from the time my head touches the pillow, there must be no more talking. Besides, we must take an early start to-morrow, and I'm tired." So saying, he hopped into his bed; and I obeyed his injunctions.

Before I followed his example, I could not resist the temptation of casting an eye through the cracks of the partition to see the effect of Ned's wonderful story upon the kind ladies. Mrs. Barney (it is time to give their names) was setting in a thoughtful posture; her left hand supporting her chin, and her knee supporting her left elbow. Her countenance was that of one who suffers from a slight toothache. Mrs. Shad leaned forward, resting her fore-arm on her knees, and looking into the fire as if she saw *groups of children* playing in it. Mrs. Reed, the landlady, who was the fattest of the three, was thinking and laughing alternately at short intervals. From my bed, it required but a slight change of position to see any one of the group at pleasure.

I was no sooner composed on my pillow, than the old ladies drew their chairs close together, and began the following colloquy in a low undertone, which rose as it progressed:—

Mrs. Barney. Didn't that man say them was two *men* that got married to one another?

Mrs. Shad. It seemed to me so.

Mrs. Reed. Why to be sure he did. I know he said so; for he said what their names was.

Mrs. B. Well, in the name o' sense, what did the man mean by saying they raised a fine pa'cel o' children?

Mrs. R. Why, bless your heart and soul, honey! that's what I've been thinkin' about. It seems mighty curious to me some how or other. I can't study it out, no how.

Mrs. S. The man must be jokin', certainly.

Mrs. R. No, he wasn't jokin'; for I looked at him and he was just as much in yearnest as any body I ever *seed;* and besides, no *Christian* man would tell such a story in that solemn way. And didn't you hear that other man say he knew their da'ter Nancy?

Mrs. S. But la' messy! Mis' Reed, it can't be so. It doesn't stand to reason, don't you know it don't?

Mrs. R. Well, I wouldn't think so; but it's hard for me, some how, to dispute a *Christian* man's word.

Mrs. B. I've been thinking the thing all over in my mind, and I reckon—now I don't say it is so, for I don't know nothing at all about it—but I reckon that one o' them men was a woman dress'd in men's clothes; for I've often hearn o' women doin' them things, and following their true-love to the wars, and bein' a watin'-boy to 'em, and all sich.

Mrs. S. Well, may be it's some how in that way—but la' me! 'twould o' been obliged to been found out; don't you know it would? Only think how many children she had. Now it stands to reason, that at some time or other it must have been found out.

Mrs. R. Well, I'm an old woman any how and I reckon the good man won't mind what an old woman says to him; so bless the Lord, if I live to see the morning, I'll ask him about it.

I knew that Ned was surpassed by no man living in extricating himself from difficulties; bu was to escape from this, with even toleral to himself, I could not devise.

* * * * * * *

The next morning, when we rose from we found the good ladies sitting round the as we left them, for they rose long before u

We were hardly seated, before Mrs. Reed verify her promise. "Mr. ———," said sh "didn't you say last night, that them was that got married to one another?"

"Yes, madam," said Ned.

"And didn't you say they raised a fine children?"

"Yes, madam, except Billy. I said, yo that he was a little wild."

"Well, yes; I know you said Billy wasn't er as the rest of them. But we old wome talking about it last night after you went o none of us could make it out, how they cou children; and I said, I reckoned you wouldn an old woman's chat; and, therefore, that I ask you how it could be? I suppose you wo telling an old woman how it was."

"Certainly not, madam. They were bot owers before they fell in love with each oth got married."

"The lack-a-day! I wonder none of us t o' that. And they had children before they g ried?"

"Yes madam; they had none afterward heard of."

We were here informed that our horses w waiting, and we bade the good ladies farewell

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FARMERS' DEPARTMEN

BARLEY.

The principal sorts of barley, may be thus b enumerated:—

The *spring barley*, which has a double ro beards or awms standing erect. This is much tivated in England, and is divided by the farmer to two sorts, viz., the common, and the th-ripe ley; but these two sorts are in reality the same the rath-ripe is only a variety of the common ley, occasioned by being long cultivated upon gravelly lands. The seeds of this, when sow cold or strong land, will, the first year, ripen a fortnight earlier than the seeds taken from land, and therefore the farmers in the vales ge ly purchase their seed barley from the warm l for, if sowed in the vales two or three years, become full as late in ripening as the commo ley of their own product: on the other hand th mers on the warm lands are also obliged to pr their seed-barley from strong land, otherwise grain would degenerate in bulk or fulness, by this change, is prevented. This sort of bar easily distinguished by the two rows of bea awms, which stand erect; the rind is also thinner, and therefore esteemed better for malt.

The *long-eared barley*, which is cultivated ny parts of England, is an exceedingly good sort. It has its grains regularly ranged in a double row, lying over each other, like the tiles on a house or the scales of fish. It has no beards or awms, but its rind is very thin, and it is therefore esteemed for making malt.

The *sprat barley* has shorter and broader ears than either of the former sorts; the awms or beards are longer, which tend greatly to preserve it from the birds, and the grains are placed closer together. This seldom grows so tall as the other species; the straw is also coarser, and therefore not such good fodder for cattle.

The *winter barley*, called also square barley, bear or big barley. There are two sorts of this barley, the one with four rows of grains, and the other with six, the latter of which is commonly distinguished by the name of barley-big. The grain is large and plump, but, the rind or chaff of it being thicker than that of either of the preceding sorts, it is less esteemed for making malt, and therefore not cultivated in the southern parts of England, where the sorts which are so much bet[illegible]or that purpose thrive so well.

Both the four and six-rowed barley are generally sown in the autumn, nearly at the same time with wheat, not only in temperate climates, but also in very cold countries, their hardiness being such as to bear the winter's frosts, even in the mountainous parts of the northern regions. In hot countries they are sown in January, February, and March. In some very light land, barley is sown early in March, but in strong clay soils not till April, and sometimes not till the beginning of May; but when it is sown so late, if the season does not prove very favourable, it is very late in autumn before it is fit to mow, unless it be the rath-ripe sort which is often ripe in nine weeks from the time of sowing: though some are of opinion that this, in particular, ought to be sown early, for otherwise it will grow very thin, and that it should be sown on better ground than the other barley, because, as it ripens in a shorter time, it may be naturally supposed to exhaust the nutritive juices of the earth faster than other corn. But it is said by others that these nutritive juices, in almost any tolerable soil, will probably hold out long enough to feed a crop of so short a standing as this is, though they might not suffice for corn which should remain longer upon the ground.

Barley requires a mellow soil, and extraordinary care is requisite where it is to be sown in clay. The land ought to be broken up immediately after the crop is removed, which lays it open to be mellowed by the frost and air. In that case the sort of ploughing termed ribbing, by which the greatest quantity of surface possible is exposed to the air, is usually resorted to. The obvious objection to this method is that half of the ridge is left unmoved, and, to obviate it, the following method has been suggested, as it breaks the whole soil and at the same time exposes the same quantity of surface to the frost and air:—As soon as the former crop is off the field, let the ridges be gathered with as deep a furrow as the soil will admit, beginning at the crown and ending at the furrows. This ploughing loosens the whole soil, giving free access to the air and frost. Soon after begin a second ploughing: let the field be divided by parallel lines across the ridges, with intervals of about thirty feet. Plough once round an interval beginning at the edges, and turning the earth toward the middle of the interval, which covers a foot or so of the ground formerly ploughed. Within that foot plough another round similar to the former, and after that other rounds, till the whole interval be finished, ending at the middle. Instead of beginning at the edges and ploughing towards the middle, begin at the middle and plough towards the edges. Plough the other intervals in the same manner. As the furrows of the ridges will thus be pretty much filled up, let them be cleared and water-furrowed without delay. By this method the field will be left ridged up for winter. In this form the field is kept perfectly dry; for, besides the capital furrows that separate the ridges, every ridge has a number of cross furrows that carry the rain instantly to the capital furrows. In grounds retentive of moisture, the parallel lines ought not to be perpendicular to the furrows of the ridges, but to be directed a little downward, to carry the rainwater to these furrows. If the ground be clean it may lie in that state through the winter and spring, till the time of seed-furrowing. If weeds rise they must be destroyed by ploughing or braking.

This method resembles common ribbing in appearance, but is very different in reality. As the common ribbing is not preceded by a gathering furrow, the half of the field is left untilled, compact as when the former crop was removed, and impervious in a great measure to air or frost. The common ribbing at the same time lodges the rain water on every ridge, preventing it from descending to the furrows, which is hurtful in all soils, and especially injurious in a clay soil. By the two ploughings the whole soil is opened, admitting freely air and frost; and the multitude of furrows lays the surface perfectly dry. When it is proper to sow the seed, all is laid flat with the brake, and the seed-furrow which succeeds is so shallow as to bury little or none of the surface-earth: whereas, the stirring for barley, being done with the deepest furrow, buries all the surface-soil that was mellowed by the frost and air. This method is also less expensive; for after common ribbing, which keeps in the rainwater, the ground is commonly so sowed as to make the stirring a laborious work.

On the cultivation of this grain we have the following observations by a farmer:—"The best soil is that which is dry and healthy, rather light than stiff, but yet of sufficient strength to retain moisture. On this kind of land the grain is always the best bodied and coloured, and has the thinnest rind. These qualities recommend it most to the malster. If the land be poor, it should be dry and warm; and when so it will often bear better grain than richer land in a cold and wet situation. In the choice of seed, the best is of a pale colour, and brightish cast, without any deep redness or black tinge at the extremity. If the rind be a little shrivelled, it is the better; for that slight shrivelling proves it to have a thin skin. The necessity of a change of seed by not sowing two years together what grew on the same soil is not in any part of husbandry more evident than in the culture of this grain, which, if not frequently changed, will grow coarser every year. Liming has been found prejudicial. Sprinkling a little soot with the water in which it is steeped, has been found of great service, as it secures the seed from insects. In a very dry seed-time, barley that has been wet for malting, and begins to sprout, will come up sooner and produce a good crop. On lands tolerably manured," adds this writer, "I sowed clover with my barley, which I reaped at harvest; and fed the clover all the following winter, and from spring to July, when I fallowed it till the following spring, and then sowed it with barley and clover as before. Repeating this method every year, I had very large crops; but would not recommend this practice on poor light land. We sow on our lightest lands in April, on our moist lands in May, finding that those lands which are the most subject to weeds produce the best crops when sown late. The common method is to sow barley broadcast at two sowings, the first harrowed in once, the second twice; the usual allowance is from three to four bushels per acre. But, if farmers could be prevailed on to alter this practice, it would be much to their advantage. Were only half the quantity of seed sown equally, the produce would be greater, and the corn less liable to lodge; for, when corn stands very close, the stalks are drawn up weak, and on that account are less capable of resisting the force of winds, or supporting themselves in heavy rains. From our great success in setting and drilling wheat, some of our farmers tried these methods with barley; but did not find it answer their expectations, except on very rich land."

When the barley is sowed, and harrowed in, he advises that the land be rolled after the first shower of rain, to break the clods. This will close the earth about the roots, which will be a great advantage to it in dry weather. "When the barley has been up three or four weeks, roll it again with a heavy roller which will prevent the sun and air from penetrating the ground to the injury of the roots. This rolling, before it branches out, will also cause it to separate into a greater number of stalks; so that if the plants be thin the ground will by this means be filled, and the stalks strengthened. If the blade grows too rank, as it sometimes will in a warm wet spring, mowing is a much better method than feeding it down with sheep, because the scythe takes off only the rank top, but the sheep, being fond of the sweet end of the stalk next the root, will often bite so close as to injure its future growth."

ANALYSIS OF SOILS.

It has been given as the *golden rule*, in Agriculture, "To use such manures as will make heavy land lighter, light land heavier, cold land hotter, and hot land colder;" or in other words to remedy the existing defects whatever they may be. In order to do this we must know what that defect is; we must understand the nature of the soil we are to operate upon in order to determine whether this or that kind of manure is to be applied, or whether a large or a small quantity is needed to bring the proportions of the soil to the standard of fertility. It is therefore of importance that the farmer should be acquainted with the nature and proportions of the constituents of soils; that he should know what these proportions are in such as are most fertile: and also what they are in the soil which he has to cultivate. This cannot be determined with any degree of accuracy but by *analysis*.

Another consideration in favour of analysis of soils is, that it will substitute precision of languag for the indefinite and unsatisfactory mode of expression which now prevails. Thus for instance th distinction between a *sandy* and a *clayey loam*, ofte does not depend so much upon certain production of clay and sand, as upon the quality of the soil c the place where the the term is used. In a sand region of the country, a soil might be termed *clayey* while the same soil in a clayey region would b called *sandy*. Another instance:—a large crop c some grain or vegetable is raised; the success i principally owing to the nature of the soil; but unless the proportions of its ingredients are given precisely, instead of describing its qualities by indefinite expressions, we are at a loss to know how t estimate those proportions.

The constituents of soils which more particularl influence their fertility, are these. 1. Stones an pebbles. These generally have little other effec than to keep the soil loose and porous, as they ar usually hard and unchanging. Sometimes, however, they absorb and retain water, and also disinte gate and mix with the finer parts of the soil. 2. *Silicious matter*. This is commonly in the form c fine and coarse sand. Soils where this predominates, are little injured by water, having little attraction for it, and retaining it feebly. They never *winter-kill* wheat. 3. *Alumnious matter*. This is th predominant constituent of clear soils. Unlike th preceding, it has a powerful attraction for water, an retains it strongly; hence clay will remain long suspended in water, while sand sinks immediately Aluminous soils suffer from too much wet, an bake hard in a dry season. 4. *Carbonate of lime* This exists in the form of limestone, chalk, an shells. It is a principal constituent of marble. Soil which have a due proportion of this ingredient, ar naturally fertile and durable in a high degree. 5 *Animal and vegetable substances*. These improv the soil by operating in several ways. They giv warmth to the soil, furnish nutriment directly to th plant, absorb moisture and nutritious substances from the air, and render the soil loose and preserve it i a state of pulverization. 6. *Water*. The powe soils possess of retaining moisture enables them t resist the effects of drought. In analysis, the quantity of water holden by soils after being exposed to th sun's rays, is that only which is considered as forming a component part of them.

The following method of analyzing soils, or ascertaining the proportions of their component parts, is if carefully conducted, sufficiently accurate for al *practical* purposes.

Specimens of the soil should be taken about three inches below the surface, and from the average o the field. A convenient quantity to experiment upon after stones are separated, is about four hundred grains

1. Separate by two sieves all the stones and pebbles; with one, those larger than a quarter of a inch in diameter, and with the other those less T effect this the soil must be first well dried in th sun and gently bruised in a mortar. Then to ascertain by weighing, the rate per cent., each bears t the original mass and note it down.

2. The soil after weighing is then placed in a crucible and heated ten or fifteen minutes to a temperature of about two hundred Fahrenheit, constantly stirring it; and if a thermometer is not used, th

proper degree of heat may be easily ascertained by means of the wooden rod with which it is stirred; while the colour of the wood remains unchanged it is not too hot, but as soon as it becomes brown the process must be stopped. It is then again weighed and the loss is set down as *water*.

3. It is next returned to the crucible, and exposed to a high red heat, till no blackness remains in it, repeatedly stirring it with an iron rod so as to expose new surfaces continually to the air. It is again weighed, and the loss denotes the amount of *animal and vegetable matter*.

4. Mix the remainder with three or four times its weight of water, stir it thoroughly for several minutes, until it is intimately diffused, and then suffer it to rest. The coarse sand will fall to the bottom of the vessel in about a minute, the finer in two or three minutes. The liquid is then poured off into another vessel, the sand dried and weighed, and its quantity noted down as *silicious soil*.

5. The decanted liquid is suffered to stand till it settles and becomes clear; it is then poured off, and the sediment dried at a red heat, weighed, and set down as *aluminous soil*.

6. The presence of carbonate of lime in soil (which is generally in small quantities,) is readily ascertained by pouring upon it muriatick acid diluted with water. If it contain carbonate of lime, an effervescence immediately takes place in a greater or less degree, according to the quantity. Genesee Farmer.

The following piece of poetry is from the pen of a daughter of Judge Lewis, of Pennsylvania, whose history (says the Commercial Advetiser) may be cited, as affording one of the finest examples in our country, of the success which mind and enterprise are capable of commanding in this, after all, happy country. So late as the year 1817, Judge Lewis was a journeyman printer in the city of New York. He assisted in getting to press the first number of Mr. Dwight's paper, the New York Daily Advertiser, in March of that year. Afterward he returned to Lycoming—established a village paper—edited it with spirit and talent—studied law during his hours of leisure—came to the bar—grappled successfully with every obstacle—fought his way to distinction—was elected to the legislature—became attorney-general of the state—and from that office was elevated to the district bench.

BY JULIET LEWIS—AGED 14 YEARS.

Oh! sing to me sweet sister, sing
The song I loved to hear,
And when I'm gone, oh sing it still
And think I'm lingering near.

Oh! let me hear before I leave
This world for yonder skies,
The trembling tone of thy rich voice,
On sighing zephyrs rise.

Oft while we've watched the weary sun,
Behind the mountains hide,
Casting his soft and parting light
On Susquehanna's tide,

And standing by our mother's side,
Or by our father's knee,
That song has risen on the breeze;
Oh! sing it NOW for me.

In fancy then will rise the scenes
Of my loved childhood's home;
Again I'll pluck my favourite flowers,
And through my loved haunts roam.

The forms of those in childhood dear,
Before me I shall see,
And present sorrow 'll be forgot;
Then sing that song for me.

The deep rich tones so sweetly rose
Upon the evening air;
They seemed to stay the hand of death,
And angels lingered there.

The song now ceased—the wail of grief
Succeeded that sweet lay;
For, with the loved and dying strains,
HER SPIRIT PASSED AWAY.

PETRA.

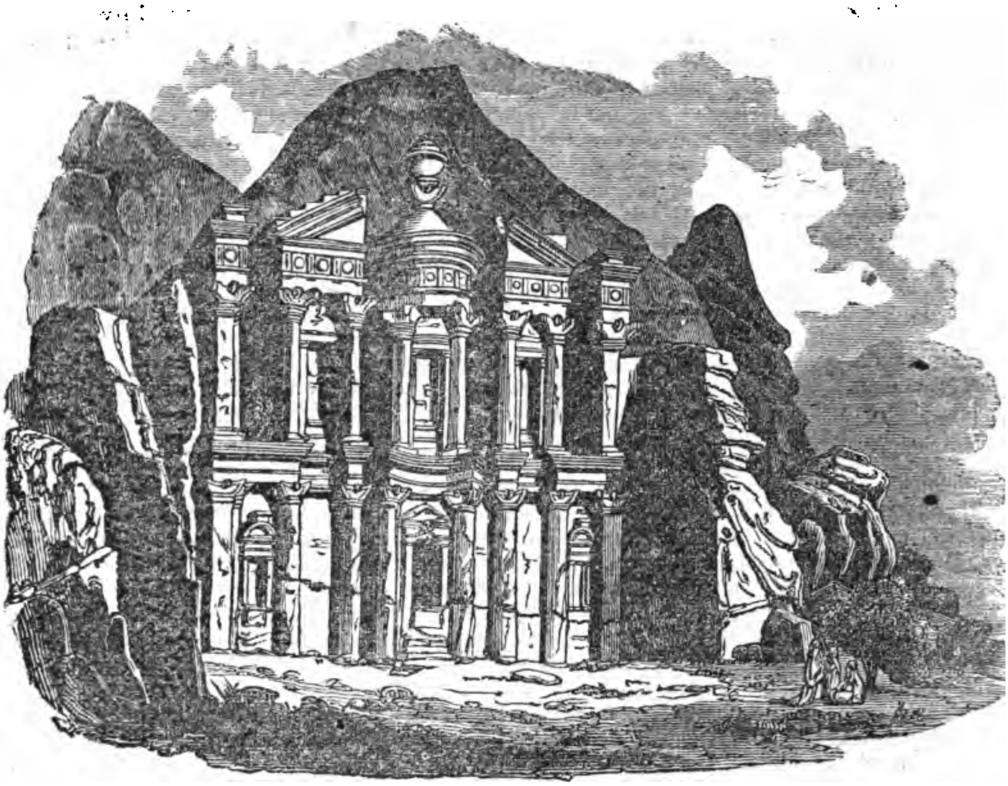
We are enabled to give two more engravings of the tombs in Petra, with this number. The volume of Laborde contains many more, some of which we intend to give in future numbers. In our last number the reader will find a minute description of these tombs, from the author of "Incidents of travel, &c.," from whose volumes we extract the following:—

"Where are ye, inhabitants of this desolate city? ye who once sat on the seats of this theatre, the young, the high-born, the beautiful, and brave; who once rejoiced in your riches and power, and lived as if there was no grave? Where are ye now? Even the very tombs, whose open doors are stretching away in long ranges before the eyes of the wondering traveller, cannot reveal the mystery of your doom: your dry bones are gone; the robber has invaded your graves, and your very ashes have been swept away to make room for the wandering Arab of the desert.

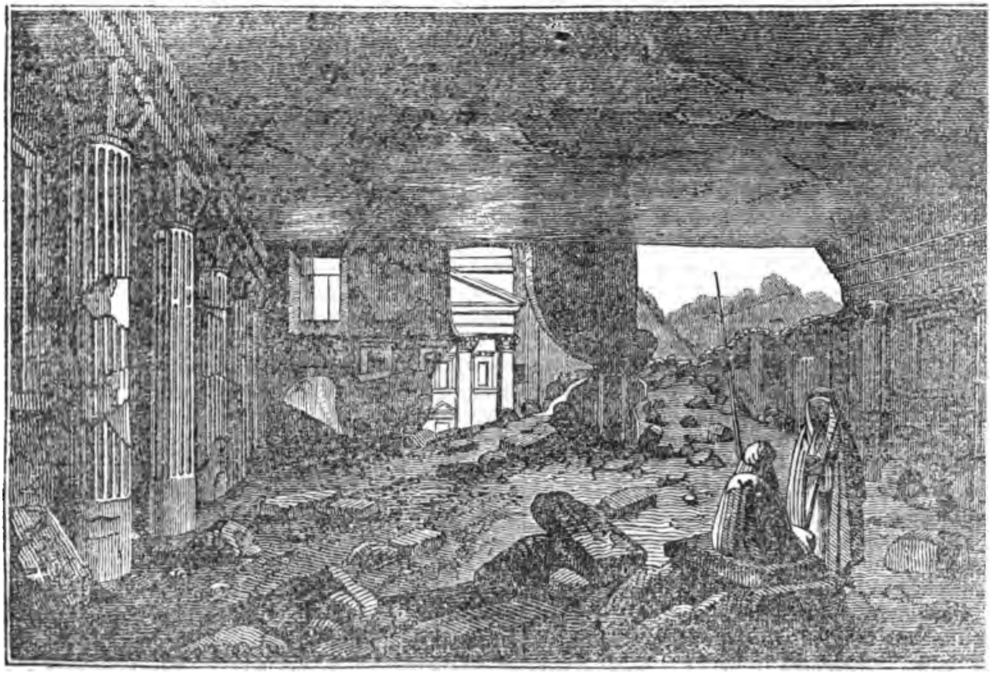
But we need not stop at the days when a gay population were crowding to this theatre. In the earliest periods of recorded time, long before this theatre was built, and long before the tragick muse was known, a great city stood here. When Esau, having sold his birthright for a mess of pottage, came to his portion among the mountains of Seir; and Edom, growing in power and strength, became presumptuous and haughty, until, in her pride, when Israel prayed a passage through her country, Edom said unto Israel, 'Thou shall not pass by me, lest I come out against thee with the sword.'

Amid all the terrible denunciations against the land of Idumea, 'her cities and the inhabitants thereof,' this proud city among the rocks, doubtless for its extraordinary sins, was always marked as a subject of extraordinary vengeance. 'I have sworn by myself, saith the Lord, that Bozrah (the strong or fortified city) shall become a desolation, a reproach, and a waste, and a curse, and all the cities thereof shall be perpetual waste. Lo, I will make thee small among the heathen, and despised among men. Thy terribleness hath deceived thee, and the pride of thy heart, oh, thou that dwellest in the clefts of the rocks, that holdest the height of the hill; though thou shouldst make thy nest as high as the eagle, I will bring thee down from thence, saith the Lord.'—Jer. xlix., 13, 16. 'They shall call the nobles thereof to the kingdom, but none shall be there, and all her princes shall be nothing; and thorns shall come up in her palaces, nettles and brambles in the fortresses thereof, and it shall be a habitation for dragons, and a court for owls.'—Is. xxxiv. 14, 15.

I would that the skeptick could stand as I did, among the ruins of this city among the rocks and there open the sacred book and read the words of the inspired penmen, written when this desolate place was one of the greatest cities in the world. I see the scoff arrested, his cheek pale, his lip quivering, and his heart quaking with fear, as the ruined city cries out to him in a voice loud and powerful as that of one risen from the dead; though he would not believe Moses and the prophets, he believes the handwriting of God himself, in the desolation and eternal ruin around him. We sat on the steps of the theatre, and made our noonday meal; and our drink was from the pure stream that rolled down at our feet



[Tomb at Petra.—From Laborde.]



[Interiour of a Tomb at Petra.—From Laborde.]

SUNDAY AT HOME.

[From "Twice Told-Tales."]

EVERY Sabbath morning, in the summer time, I thrust back the curtain, to watch the sunrise stealing down a steeple, which stands opposite my chamber window. First, the weathercock begins to flash; then, a fainter lustre gives the spire an airy aspect; next it encroaches on the tower, and causes the index of the dial to glisten like gold, as it points to the gilded figure of the hour. Now, the loftiest window gleams, and now the lower. The carved frame-work of the portal is marked strongly out. At length, the morning glory, in its descent from heaven, comes down the stone steps, one by one; and there stands the steeple, glowing with fresh radiance, while the shades of twilight still hide themselves among the nooks of the adjacent buildings. Methinks, though the same sun brightens it, every fair morning, yet the steeple has a peculiar robe of brightness for the Sabbath.

By dwelling near a church, a person soon contracts an attachment for the edifice. We naturally personify it, and conceive its massive walls, and its dim emptiness, to be instinct with a calm, and meditative, and somewhat melancholy spirit. But the steeple stands foremost, in our thoughts, as well as locally. It impresses us as a giant, with a mind comprehensive and discriminating enough to care for the great and small concerns of all the town. Hourly, while it speaks a moral to the few that think, it reminds thousands of busy individuals of their separate and most secret affairs. It is the steeple, too, that flings abroad the hurried and irregular accents of general alarm; neither have gladness and festivity found a better utterance, than by its tongue; and when the dead are slowly passing to their home, the steeple has a melancholy voice to bid them welcome. Yet, in spite of this connexion with human interests, what a moral loneliness, on week-days, broods round about its stately height! It has no kindred with the houses above which it towers; it looks down into the narrow thoroughfare, the lonelier, because the crowd are elbowing their passage at its base. A glance at the body of the church deepens this impression. Within, by the light of distant windows, amid refracted shadows, we discern the vacant pews and empty galleries, the silent organ, the voiceless pulpit, and the clock, which tells to solitude how time is passing. Time—where man lives not—what is it but eternity? And in the church, we might suppose, are garnered up, throughout the week, all thoughts and feelings that have reference to eternity, until the holy day comes round again, to let them forth. Might not, then, its more appropriate site be in the outskirts of the town, with space for old trees to wave around it, and throw their solemn shadows over a quiet green? We will say more of this hereafter.

But, on the Sabbath, I watch the earliest sunshine, and fancy that a holier brightness marks the day, when there shall be no buzz of voices on the Exchange, nor traffick in the shops, nor crowd, nor business, anywhere but at church. Many have fancied so. For my own part, whether I see it scattered down among tangled woods, or beaming broad across the fields, or hemmed in between brick buildings, or tracing out the figure of the casement on my chamber floor, still I recognise the Sabbath sunshine. And ever let me recognise it! Some illusions, and this among them, are the shadows of great truths. Doubts may flit around me, or seem to close their evil wings, and settle down; but, so long as I imagine that the earth is hallowed, and the light of heaven retains its sanctity, on the Sabbath—while that blessed sunshine lives within me—never can my soul have lost the instinct of its faith. If it have gone astray, it will return again.

I love to spend such pleasant Sabbaths, from morning till night, behind the curtain of my open window. Are they spent amiss? Every spot, so near the church as to be visited by the circling shadow of the steeple, should be deemed consecrated ground, to-day. With stronger truth be it said, that a devout heart may consecrate a den of thieves, as an evil one may convert a temple to the same. My heart, perhaps, has not such holy, nor, I would fain trust, such impious potency. It must suffice, that, though my form be absent, my inner man goes constantly to church, while many, whose bodily presence fills the accustomed seats, have left their souls at home. But I am there, even before my friend, the sexton. At length, he comes—a man of kindly, but sombre aspect, in dark gray clothes, and hair of the same mixture—he comes, and applies his key to the wide portal. Now, my thoughts may go in among the dusty pews, or ascend the pulpit without sacrilege, but soon come forth again, to enjoy the musick of the bell. How glad, yet solemn too! All the steeples in town are talking together, aloft in the sunny air, and rejoicing among themselves, while their spires point heavenward. Meantime, here are the children assembling to the Sabbath-school, which is kept somewhere within the church. Often, while looking at the arched portal, I have been gladdened by the sight of a score of these little girls and boys, in pink, blue, yellow, and crimson frocks, bursting suddenly forth into the sunshine, like a swarm of gay butterflies that had been shut up in the solemn gloom. Or I might compare them to cherubs, haunting that holy place.

About a quarter of an hour before the second ringing of the bell, individuals of the congregation begin to appear. The earliest is invariably an old woman in black, whose bent frame and rounded shoulders are evidently laden with some heavy affliction, which she is eager to rest upon the altar. Would that the Sabbath came twice as often, for the sake of that sorrowful old soul! There is an elderly man, also, who arrives in good season, and leans against the corner of the tower, just within the line of its shadow, looking downward with a darksome brow. I sometimes fancy that the old woman is the happier of the two. After these, others drop in singly, and by twos and threes, either disappearing through the door-way, or taking their stand in its vicinity. At last, and always with an unexpected sensation, the bell turns in the steeple overhead, and throws out an irregular clangor, jarring the tower to its foundation. As if there were magick in the sound, the side-walks of the street, both up and down along, are immediately thronged with two long lines of people, all converging hitherward, and streaming into the church. Perhaps the far-off roar of a coach draws nearer—a deeper thunder by its contrast with the surrounding stillness—until it sets down the wealthy worshippers at the portal, among their humblest brethren. Beyond that entrance, in theory at least, there are no distinctions of earthly rank; nor, indeed, by the goodly apparel which is flaunting in the sun, would there seem to be such, on the hither side. Those pretty girls! Why will they disturb my pious meditations! Of all days in the week, they should strive to look least fascinating on the Sabbath, instead of heightening their mortal loveliness, as if to rival the blessed angels, and keep our thoughts from heaven. Were I the minister himself, I must needs look. One girl is white muslin from the waist upward, and black silk downward to her slippers; a second blushes from top-knot to shoe-tie, one universal scarlet; another shines of a pervading yellow, as if she had made a garment of the sunshine. The greater part, however, have adopted a milder cheerfulness of hue. Their veils, especially when the wind raises them, give a lightness to the general effect, and make them appear like airy phantoms, as they flit up the steps, and vanish into the sombre door-way. Nearly all—though it is very strange that I should know it—wear white stockings, white as snow, and neat slippers, laced crosswise with black riband, pretty high above the ankles. A white stocking is infinitely more effective than a black one.

Here comes the clergyman, slow and solemn, in severe simplicity, needing no black silk gown to denote his office. His aspect claims my reverence, but cannot win my love. Were I to picture Saint Peter, keeping fast the gate of heaven, and frowning, more stern than pitiful, on the wretched applicants, that face should be my study. By middle age, or sooner, the creed has generally wrought upon the heart, or been attempered by it. As the minister passes into the church, the bell holds its iron tongue, and all the low murmur of the congregation dies away. The gray sexton looks up and down the street, and then at my window-curtain, where, through the small peep-hole, I half fancy that he has caught my eye. Now, every loiterer has gone in, and the street lies asleep in the quiet sun, while a feeling of loneliness comes over me, and brings also an uneasy sense of neglected privileges and duties. Oh, I ought to have gone to church! The bustle of the rising congregation reaches my ears. They are standing up to pray. Could I bring my heart into unison with those who are praying in yonder church, and lift it heavenward, with a fervour of supplication, but no distinct request, would not that be the safest kind of prayer? "Lord, look down upon me in mercy!" With that sentiment gushing from my soul, might I not leave all the rest to Him?

Hark! the hymn. This, at least, is a portion of the service which I can enjoy better than if I sat within the walls, where the full choir, and the massive melody of the organ, would fall with a weight upon me. At this distance, it thrills through my frame, and plays upon my heart-strings, with a pleasure both of the sense and spirit. Heaven be praised, I know nothing of musick, as a science; and the most elaborate harmonies, if they please me, please as simply as a nurse's lullaby. The strain has ceased, but prolongs itself in my mind, with fancied echoes, till I start from my revery, and find that the sermon has commenced. It is my misfortune seldom to fructify, in a regular way, by any but printed sermons. The first strong idea, which the preacher utters, gives birth to a train of thought, and leads me onward, step by step, quite out of hearing of the good man's voice, unless he be indeed a son of thunder. At my open window, catching now and then a sentence of the "parson's saw," I am as well situated as at the foot of the pulpit-stairs. The broken and scattered fragments of this one discourse will be the texts of many sermons, preached by those colleague pastors—colleagues, but often disputants—my Mind and Heart. The former pretends to be a scholar, and perplexes me with doctrinal points; the latter takes me on the score of feeling; and both, like several other preachers, spend their strength to very little purpose. I, their sole auditor, cannot always understand them.

Suppose that a few hours have passed, and behold me still behind my curtain, just before the close of the afternoon service. The hour-hand on the dial has passed beyond four o'clock. The declining sun is hidden behind the steeple, and throws its shadow straight across the street, so that my chamber is darkened, as with a cloud. Around the church door, all is solitude, and an impenetrable obscurity, beyond the threshold. A commotion is heard. The seats are slammed down, and the pew-doors thrown back—a multitude of feet are trampling along the unseen aisles—and the congregation bursts suddenly through the portal. Foremost, scampers a rabble of boys, behind whom moves a dense and dark phalanx of grown men, and lastly, a crowd of females, with young children, and a few scattered husbands. This instantaneous outbreak of life into loneliness is one of the pleasantest scenes of the day. Some of the good people are rubbing their eyes, thereby intimating that they have been wrapped, as it were, in a sort of holy trance, by the fervour of their devotion. There is a young man, a third rate coxcomb, whose first care is always to flourish a white handkerchief, and brush the seat of a tight pair of black silk pantaloons, which shine as if varnished. They must have been made of the stuff called "everlasting," or perhaps of the same piece as Christian's garments, in the Pilgrim's Progress, for he put them on two summers ago, and has not yet worn the gloss off. I have taken a great liking to those black silk pantaloons. But, now, with nods and greetings among friends, each matron takes her husband's arm, and paces gravely homeward, while the girls also flutter away, after arranging sunset walks with their favoured bachelors. The Sabbath eve is the eve of love. At length, the whole congregation is dispersed. No; here, with faces as glossy as black satin, come two sable ladies and a sable gentleman, and close in their rear, the minister, who softens his severe visage, and bestows a kind word on each. Poor souls! To them, the most captivating picture of bliss in heaven, is—"There we shall be white!"

All is solitude again. But, hark!—a broken warbling of voices, and now, attuning its grandeur to their sweetness, a stately peal of the organ. Who are the choristers? Let me dream, that the angels, who came down from heaven, this blessed morn, to blend themselves with the worship of the truly good, are playing and singing their farewell to the earth. On the wings of that rich melody, they were borne upward.

This, gentle reader, is merely a flight of poetry. A few of the singing men and singing women had lingered behind their fellows, and raised their voices fitfully, and blew a careless note upon the organ. Yet, it lifted my soul higher than all their former strains. They are gone—the sons and daughters of musick—and the gray sexton is just closing the portal. For six days more, there will be no face of man in the pews, and aisles, and galleries, nor a voice in the pulpit, nor musick in the choir. Was it worth while to rear this massive edifice, to be a desert in the heart of the town, and populous only for a few hours of each seventh day? Oh! but the church is a symbol of religion. May its site, which was consecrated on the day when the first tree was felled, be kept holy for ever, a spot of solitude and peace, amid the trouble and vanity of our week-day world! There is a moral, and a religion too, even in the silent walls. And, may the steeple still point heavenward, and be decked with the hallowed sunshine of the Sabbath morn!

THE DEATH OF CHASTELAR.

[Passages in the life of Mary Stuart.]

"An hour had scarce elapsed, before the lights were extinguished throughout the vaulted halls of Holyrood; the guards were posted for the night, the officers had gone their rounds, the ladies of the royal circle were dismissed, and all was darkness and silence. In Mary's chamber a single lamp was burning in a small recess, before a beautifully executed painting of the Virgin, but the light was not sufficient to penetrate the obscurity which reigned in the many angles and alcoves of that irregular apartment, although the moonbeams were admitted through the open casement.

"Her garb of ceremony laid aside, her lovely shape scarcely veiled by a single robe of spotless linen, her auburn tresses flowing in unrestrained luxuriance, almost to her feet, if she had been a creature of perfect human beauty, when viewed in all the pomp of royal pageantry, she now appeared a being of supernatural loveliness. Her small white feet, unsandaled, glided over the rich carpet with a grace, which a slight degree of fancy might have deemed the motion peculiar to the inhabitants of another world. For an instant ere she returned to her repose, she leaned against the carved mullions of the window, and gazed pensively, and, it might be, sadly upon the garden, where she had so lately parted with the unhappy youth whose life was thus embittered by that very feeling which above all others should have been its consolation. Withdrawing her eyes from the moonlight scene, she knelt before the lamp and the shrine which it illuminated, and her whispered orisons arose, pure as the source from which they flowed—the prayers of a weak and humble mortal, penitent for every trivial errour, breathing all confidence to Him who can alone protect or pardon; the prayers of a queen, for her numerous children, and last, and holiest of all, a woman's prayers for her unfortunate admirer. Yes, she prayed for Chastelar, that strength might be given to him from on high to bear the crosses of a miserable life, and that by divine mercy the hopeless love might be uprooted from his breast. The words burst passionately from her lips, her whole form quivered with excess of her emotion, and the big tears fell like rain from her uplifted eyes. While she was yet in the very flood of passion, a sigh was breathed, so clearly audible, that the conviction flashed like lightning on her soul, that this most secret prayer was listened to by other ears than those of heavenly ministers. Terrour, acute terrour, took possession of her mind, banishing by its superiour violence every less engrossing idea. She snatched the lamp from its niche—waved it slowly around the room—and there, in the most hallowed spot of her widowed chamber, a spy upon her unguarded moments, stood a dark figure. Even in that moment of astonishment and fear, as if by instinct, the beautiful instinct of purely female modesty, she snatched a velvet mantle from the seat on which it had been cast aside, and veiled her person even before she spoke—'Oh God! it is de Chastelar.'

"'Sweet queen'—replied the intruder—'bright, beautiful ruler of my destinies, pardon'—

"'What ho!'—she screamed in notes of dread intensity—'*à moi, à moi, mes Francais.* My guards! —Seyton, Carmichael, Fleming, will ye leave your queen alone! alone with treachery and black dishonour!—Villain!—Slave!'—she cried, turning her flashing eyes upon him, her whole form swelling as it were with all the fury of injured innocence—'didst thou dare to think that Mary—Mary the wife of Francis—the anointed queen of Scotland, would brook thine infamous addresses—Nay, kneel not—or I spurn thee—What ho! will no one aid in my extremity!'—

"'Fear nought from me'—faltered the wretched Chastelar; but with a voice like that of some inspired Pythoness, she broke in—'Fear! thinkest thou that I could fear a thing, an abject coward thing, like thee? —a wretch that would exult in the infamy of one whom he pretends to love?—Fear thee! by heavens, if I could have feared, contempt must have forbidden it.'

"'Nay—Mary—hear me! hear me but one word, if that word cost my life'—

"'Thy life—hadst thou ten thousand lives, they would be but a feather in the scale against thy monstrous villany. What ho!'—again she cried, stamping with anger at the delay of her attendants. 'Treason! my guards, treason!' At length the passages rang with the hurried footsteps of the startled inmates of the palace, with torch, and spear, and brandished blades, they rushed into the apartment, page, sentinel, and chamberlain, ladies, with dishevelled hair, and faces blanched with terrour. The queen stood erect in the centre of the room, pointing with one white arm bare to the shoulder towards the wretched culprit, who with folded arms and head erect awaited his doom in unresisting silence. His naked rapier, with which alone he might have foiled the united efforts of his enemies, lay at his feet, his brow was white as sculptured marble, and no less rigid, but his eyes glared wildly, and his lips quivered as though he would have spoken. The queen, still furious at the wrong which he had done her fame, marked the expression. 'Silence!' she cried—'degraded! wouldst thou meanly beg thy forfeited life? Wert thou my father, thou shouldst die to-morrow! Hence with the villain! Bid Maitland execute the warrant. Ourself—ourself will sign it, away! Chastelar dies at daybreak.'

"'Tis well,' replied he calmly, 'it is well, the lips I love the best pronounced my doom, and I die happy, since I die for Mary! Wouldst thou but pity the offender, while thou dost doom the offence, de Chastelar would not exchange his shortened span of life, and violent death, for the brightest crown of Christendom. My limbs may die, my love will live for ever! Lead on, minions, I am more glad to die, than ye to slay! Mary, beautiful Mary, think! think hereafter upon Chastelar!'

"The guards passed onward—last of the group, unfettered and unmoved, de Chastelar stalked after them. Once, ere he stepped beneath the low-bowed portal, he paused, placed both hands on his heart, bowed lowly and then pointed upward, as he chanted once again the words, 'Pensez à moi, Noble Dame, Pensez à moi.' As he vanished from her presence, she waved her hand impatiently to be left alone, and all night long she traversed and retraversed the floor of her chamber in paroxysms of the fiercest despair. The warrant was brought to her—silently, sternly, she traced her signature beneath it; not a sign of sympathy was on her pallid features, not a tremour shook her frame; she was passionless, majestick, and unmoved. The secretary left the chamber on his fatal errand, and Mary was again a woman. Prostrate upon her couch she lay, sobbing and weeping as though her very soul was bursting from her bosom, defying all consolation, spurning every offer at remedy. 'Tis done!' she would say, —'Tis done!—I have preserved my fame, and murdered mine only friend.'

"The morning dawned slowly, and the heavy bells of all the churches clanged the death-peal of Chastelar. The tramp of the cavalry defiling from the palace-gates struck on her heart as though each hoof dashed on her bosom. An hour passed away, the minute-bells still tolling, the roar of a culverin swept heavily downward from the castle, and all was over! He had died as he had lived, undaunted!—as he had lived, devoted!—'Mary, divine Mary,'—were his last words—'I love in death, as I have loved in life—thee and thee only.' The axe drank his blood, and the queen of Scotland had not a truer servant left behind, than he, whom for a moment's phrensy she was compelled to slay—yet was his last wish satisfied, for though the queen might not relent, the woman did forgive, and in many a mournful hour did Mary think on Chastelar."

NEW YORK, PHILADELPHIA, AND BOSTON.

I was greatly amused last week on board a steamboat, by listening attentively to a disputatious conversation between a Bostonian, a New Yorker, and a Philadelphian, setting forth the several excellences of their several cities. The Bostonian was the most learned and pedantick, the New York man the most loquacious and grandiloquent, and the Philadelphian the most sensitive and uncomp The first discoursed in a lofty strain of the charms of antiquity, and the advanced st erature and the fine arts in the regions rou Cape Cod. 'The unparallelled state of ou and scientifick institutions,' said he, 'and treme beauty of many of our publick buildi be admitted'—

"'Publick buildings,' interrupted the phian, cutting short the thread of the man ton's discourse, 'if you want to see a publi ing, look at our market, look at our bank, our'——

"'And if you talk of architectural bea the New Yorker, 'look at our City Hal Paul's Church, and the Park theatre; and fine arts,' continued he with solemnity, ' them as introducing luxury and corruption— only for the tainted atmosphere of Europ consistent with the genius of our politic tions, and, I thank Heaven, the charge o aging them cannot be laid to New Yor quoth he, gathering strength as he went a a stone rolling down a hill—'give me t arts. When I contemplate the immense custom-house yearly pays into the nationa —when I behold our docks crowded wit —when I survey our spacious bay, stu islands, and our waters covered with'——

"'Your waters!' interrupted the Phil unable any longer to withstand this torre gium, 'your waters! why there isn't a dro fit to drink in your whole town. If you w go to Philadelphia; or if you want milk, or shad, or straight streets, or fresh butte air, or'——

"'Fresh air!' interrupted York, in a s tone, and with an ironical though somew expression of countenance, 'why, you worth speaking of in Philadelphia; look air—*our* fresh sea-breezes daily wafte vast Atlantick through our streets.'

"'*Through* your streets!' reiterated th ant of William Penn in a fury; '*through* y Let me tell you, sir, your sea-breezes *m* enough, but your streets are so curse that the breezes cannot find their way *t* —let me tell you that, sir.'

"The blood of the man of York was endeavoured to keep down his rising then in a voice of affected calmness, t bling with rage, began to undervalue straight streets, and boldly affirmed t ones were infinitely better for a variety that he did not think proper to mention, man of taste would decide that Pearl finer street than any in Philadelphia.

"This was perfectly unbearable, and phian, after swearing in a very wic went on to more than insinuate that was a fool, an ass, an idiot, and no gen they might have proceeded to settle wh or crooked streets were best by knockin brains out, if the company had not inter pily at this crisis the dinner-bell rang, who have travelled much in steamboats no more to account for the instant ce symptoms of hostility." Cra

DENOMINATION OF UNIVERSALISTS.

To the Eds. of the Family Magazine:—

I CANNOT better comply with your request for a brief sketch of the belief, rise and present state of the denomination of Universalists in the United States, than by furnishing an article prepared by the Rev. Thomas Whittemore, Boston, and Rev. L. R. Paige, Cambridgeport, Mass., for "Hayward's Religious Creeds and Statisticks, of every Christian Denomination in the United States," a valuable little work issued from the press in Boston, in 1836—valuable, I say, because I deem it characterized by candour, and an evident design to arrive at truth, in its statements of the doctrines and condition of the various Christian denominations in America.

In the article in question, (on Universalism,) Professor Tholuck, of Germany, is alluded to as a believer in the final restitution. It is no more than just to say here, that the testimony of Professor Sears has been called in question by many Limitarians, and confident opinions advanced that he must have misapprehended Professor Tholuck. More recently, a letter from Professor Tholuck himself, addressed to the editor of the "Lutheran Observer," has been produced, which would seem to clash with Professor Sears's statement. But when it is remembered that this letter of Professor Tholuck is in reply to special interrogatories on the very points in dispute—interrogatories, too, penned under the natural excitement of the circumstances, and a probable desire to counteract the impressions which Professor Sears's testimony was calculated to make in community, may it not be equally reasonable to suppose that Professor Tholuck *misapprehended the interrogatories*, or was misled by the manner in which they were put, as that Professor Sears misapprehended his sentiments, with all the advantages of a familiar personal intercourse, and an attendance on his publick lectures? Professor Sears is a distinguished clergyman of the Baptist denomination, and no one, for a moment, will presume to question his intentions. The difficulty, if difficulty there be, must therefore be founded in *misapprehension*.

I merely make this suggestion, leaving it for the reader to draw his own inferences; deeming it but justice to allude to Professor Tholuck's late letter, seeing that it appeared subsequently to the preparation of the article for Hayward, which I give below, without further remark. P. PRICE.

The grand distinguishing characteristick of this class of Christians is their belief in the final holiness and happiness of the whole human family. Some of them believe that all punishment for sin is endured in the present state of existence, while others believe it extends into the future life; but all agree that it is administered in a spirit of kindness, is intended for the good of those who experience it, and that it will finally terminate, and be succeeded by a state of perfect and endless holiness and happiness.

Doctrine. The following is the "Profession of Belief," adopted by the General Convention of Universalists in the United States, at the session holden in 1803: it has never been altered, and it is perfectly satisfactory to the denomination.

"ART. I. We believe that the Holy Scriptures of the Old and New Testaments contain a revelation of the character of God, and of the duty, interest, and final destination of mankind.

"ART. II. We believe that there is one God, whose nature is love; revealed in one Lord Jesus Christ, by one holy Spirit of grace; who will finally restore the whole family of mankind to holiness and happiness.

"ART. III. We believe that holiness and true happiness are inseparably connected; and that believers ought to be careful to maintain order, and practise good works; for these things are good and profitable unto men."

History. Universalists claim that the salvation of all men was taught by Jesus Christ and his apostles. It was also taught and defended by several of the most eminent Christian fathers: such as Clemens Alexandrinus, Origen, &c. In the third and fourth centuries, this doctrine prevailed extensively, and for aught which appears to the contrary, was then accounted orthodox. It was at length condemned, however, by the fifth general council, A. D. 553; after which, we find few traces of it through the dark ages so called.

It revived at the period of the Reformation, and since that time, has found many able and fearless advocates: in Switzerland, Petitpierre and Lavater; in Germany, Stilling, Petersen, Seigvolk, Everhard, Steinbart and Semler; in Scotland, Purves, Douglass, and T. S. Smith; in England, Coppin, Jeremy White, Dr. H. More, Dr. T. Burnet, Whiston, Hartley, Bishop Newton, Stonehouse, Barbauld, Linsey, Priestly, Belsham, Carpenter, Relly, Vidler, Scarlett, and many others.

At the present day, Universalism prevails, more extensively than elsewhere, in England, Germany, and the United States.

In England, the Unitarian divines, generally, believe in the final salvation of all men. Dr. Lant Carpenter says: "Most of us, however, believe that a period will come to each individual, when punishment shall have done its work, when the awful sufferings with which the Gospel threatens the impenitent and disobedient, will have humbled the stubborn, purified the polluted, and eradicated malignity, impiety, hypocrisy, and every evil disposition; that a period will come, (which it may be the unspeakable bliss of those who enter the joy of their Lord to accelerate, which, at least, it will be their delight to anticipate,) when He, who 'must reign till he hath put *all enemies* under his feet,' 'shall have put down all rule, and all authority, and power.' 'The LAST ENEMY, Death, shall be DESTROYED.' 'Every tongue shall confess that Jesus Christ is Lord, to the glory of God the Father,' 'who wills that all men should be saved, and come to the knowledge of the truth,' that truth which sanctifies the heart, that knowledge which is life eternal; and God shall be ALL IN ALL."

In Germany, nearly every theologian is a believer in the final salvation of all men. Speaking of Professor Tholuck, Professor Sears says: "The most painful disclosures remain yet to be made. This distinguished and excellent man, in common with the *great majority of the evangelical divines* of Germany, though he professes to have serious doubts, and is cautious in avowing the sentiment, believes that all men and fallen spirits will finally be saved." Mr. Dwight, in his recent publication, says: "The doctrine of the eternity of future punishments is almost universally rejected. I have seen but one person in Germany who believed it, and but one other whose mind was wavering on this subject." Universalism may, therefore, be considered the prevailing religion in Germany.

In the United States, Universalism was little known until about the middle of the last century; and afterward it found but few advocates during several years. Dr. George de Benneville, of Germantown, Penn., Rev. Richard Clarke, of Charleston, S. C., and Jonathan Mayhew, D. D., of Boston, were, perhaps, the only individuals who publickly preached the doctrine before the arrival of Rev. John Murray, in 1770. Mr. Murray laboured almost alone, until 1780, when Rev. Elhanan Winchester, a popular Baptist preacher, embraced Universalism, though on different principles. About ten years afterward, Rev. Hosea Ballou embraced the same doctrine, but on principles different from those advocated by Mr. Murray or Mr. Winchester. To the efforts of these three men is to be attributed much of the success which attended the denomination in its infancy. Although they differed widely from each other in their views of punishment, yet they laboured together in harmony and love, for the advancement of the cause which was dear to all their hearts. The seed which they sowed has since produced an abundant harvest.

The ministry of the Universalist denomination in the United States, hitherto, has been provided for, not so much by the means of schools, as by the unaided, but irresistible influence of the gospel of Christ. This has furnished the denomination with its most successful preachers. It has turned them from other sects and doctrines, and brought them out from forests and fields, and from secular pursuits of almost every kind, and driven them, with inadequate literary preparation, to the work of disseminating the truth. This state of things has been unavoidable, and the effect of it is visible. It has made the ministry of the Universalist denomination very different from that of any other sect in the country; studious of the Scriptures, confident in the truth of their distinguishing doctrine, zealous, firm, industrious; depending more on the truths communicated for their success, than on the manner in which they were stated. It has had the effect also to give the ministry a polemick character; the natural result of unwavering faith in the doctrine believed, and of an introduction into the desk without scholastick training. But the attention of the denomination in various parts of the country, has of late been turned to the education of the ministry; and conventions and associations have adopted resolves, requiring candidates to pass examinations in certain branches of literature. The same motive
many in their effort to establish lit
gical institutions. The desire to
respectable for literary acquiremen

A few years since, a small numb
the denomination, and adopted th
Restorationists. To prevent mis
may be repeated, that although a f
ceded, yet a difference of opinion
duration of punishment has not dist
ny of the denomination generally,
as sufficient cause for breach of fell
ation of heart and affection.

The Universalists quote the fo
Scripture, among others, in suppor
ments. See Gen xxii. 18. Ps. x
9. Isa. xxv. 6, 7, 8—xlv. 23, 24.
34. Lam. iii. 31—33. John xii.
21. Rom. v. 18, 21—viii. 38, 39—
Cor. xv. 22—28 and 51—57. 2
Gal. iii. 8. Eph. i. 9, 10. Phil. ii.
19, 20. 1 Tim. ii. 1—6. Heb vii
v. 13—xxi. 3, 4.

In a note, by the Editor, in the
work from which the foregoing is ta
ing additional particulars are given:-

The following table exhibits th
the Universalists.:—

STATES.	Preachers.	Soc tie
Maine - - -	29	10
New Hampshire - -	32	7
Vermont - - -	25	8
Massachusetts - -	67	9
Rhode Island - -	2	
Connecticut - - -	14	4
New York - - -	100	18
New Jersey - - -	1	
Pennsylvania - -	13	2
Maryland - - -	3	
Ohio - - - -	14	3
Indiana - - - -	2	
Kentucky - -	..	
South Carolina -	3	
Alabama - - -	3	
Lower Canada - -	6	
	314	65

There are one or two societies in
Carolina, Georgia, Illinois, Michigan
ada, and Nova Scotia. The populat
nomination in the United States is
dred thousand.

The government and discipline of
ist denomination, so far as it has yet
ed on general principles, are republi
nal; in accordance with the mild,
affectionate principles of Christianity

The smallest associations are thos
es and *societies*. These are formed
of believers in a vicinity, according
the state or territory, or to the custo
munity, where there are no legal reg
subject. *Brother* is the common an
all the male members, as *sister* is
males. Where discipline is institu
cieties only, it is, as it should be,
pline, and conducted according to the

in the New Testament: particularly as recommended in Matt. v. 23, 24—vii. 12—xviii. 15—23; and the parallel passages.

The societies are sovereign and independent; competent to govern themselves, select and discharge their own officers and preachers. But for social purposes, and to promote unity and harmony among and with each other, in certain districts they unite themselves into Associations and Conventions."

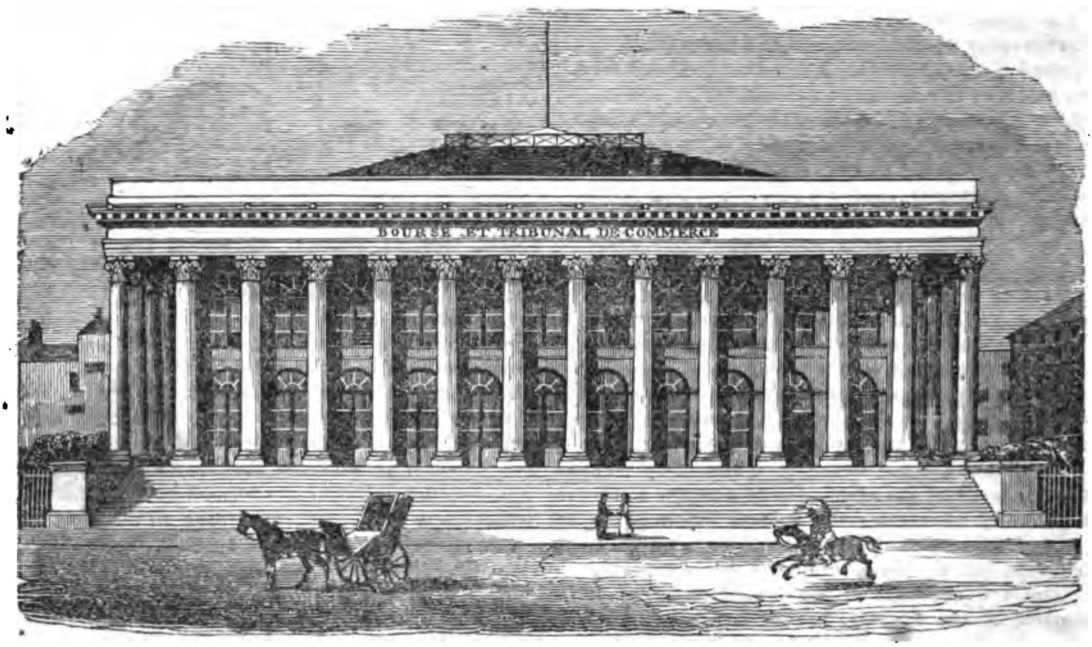
Note. It is now about two years since the statisticks above-mentioned were prepared. Considerable accessions have since been made. The number of societies may now be safely computed at 750—Preachers, 409—Meeting-houses, over 800—population 750,000.

Ten or twelve periodicals are published in this denomination, altogether issuing some twenty-eight to thirty thousand copies, which are read by a vastly increased number of persons; for no publications are probably *borrowed* more than Universalist papers, many being curious to read, who *dare* not subscribe for them. P. P.

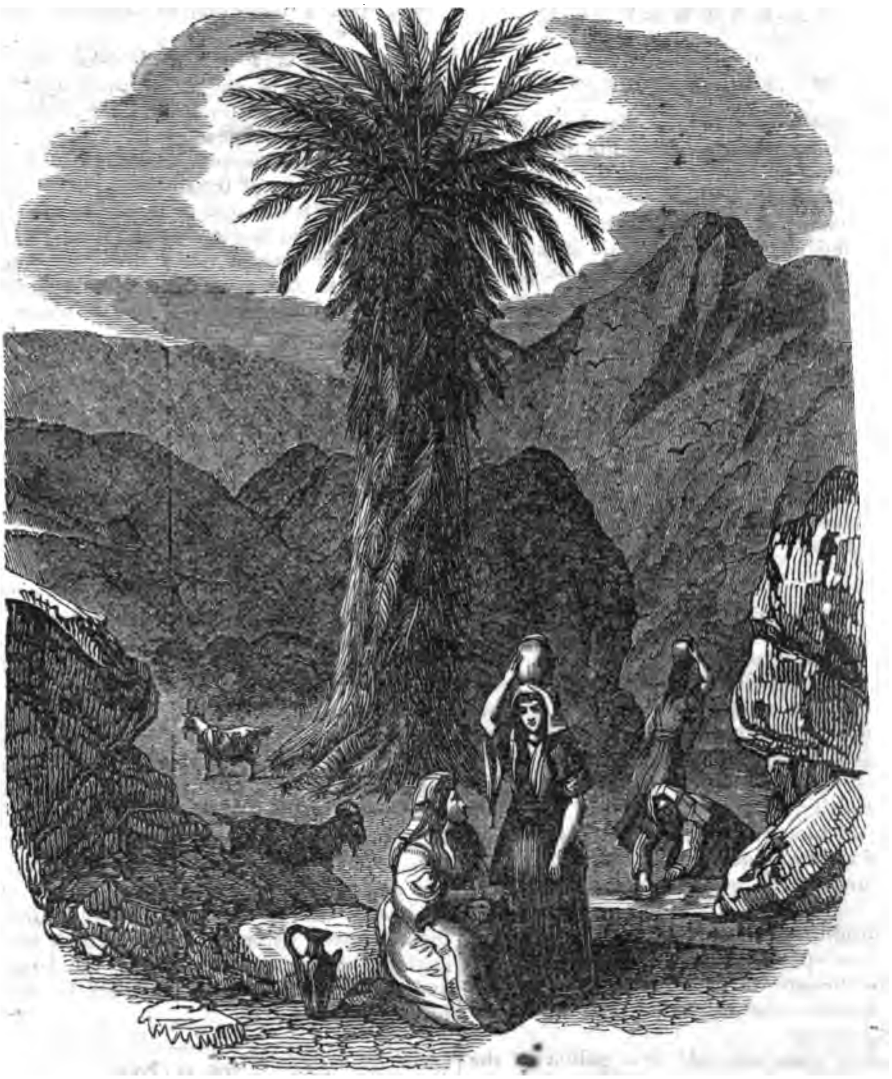
PARIS EXCHANGE.

The annexed wood-cut represents the Bourse, or Exchange of Paris, situated in the *Rue Filles St. Thomas.*

The old Exchange was originally established in a part of the Palace Mazarin, in the building now occupied as the Treasury. At the time of the revolution it was transferred to the *Petits Pères*, afterward to the *Galerie de Virginie* of the Palais Royal. The first stone of the new Exchange was laid in 1808. It was commenced under the direction, and from the designs of the celebrated architect Brongniart. It occupies a space which formerly belonged to the convent of the *Filles de St. Thomas.* It is in form a long square, running in length to two hundred and twelve French feet, and in breadth one hundred and twenty-six feet. It presents a perfect peristyle, with Corinthian columns each way in front, raised upon a basement of about eighty feet in height The columns are sixty-six in number, forming a fine piazza about the building, and the whole appearance of the structure is imposing and magnificent to a high degree. A handsome vestibule leads on the right to the private apartments appropriated to the brokers, and on the left to the Tribunal of Commerce, which is also attached to this building. A spacious room of about one hundred and sixteen feet long, and seventy broad, capable of holding two thousand persons, is appropriated to the business of the Exchange. Brongniart, the architect, did not live to see his noble work completed. He died in 1813, and Mr. Labarre, at his death, superintended the structure until its completion. The interiour is well conceived. The communications between the different offices, the Tribunal, &c. are arranged in the most convenient manner imaginable. It is considered one of the most perfect and handsomest edifices of the kind in Europe.


BOURSE ET TRIBUNAL DE COMMERCE

[Paris Exchange.]



[Wild Date-Palm.]

THE DATE-PALM.

"The wild date-palm is the *Phœnix dactylifera* of Linnæus. This is one of the most useful of the palms, and yields every year great crops of fine rich fruit, forming not only a valuable part of the food of the lower orders of society, but a vast surplus for exportation to other countries.

Persia, Palestine, and the northern states of Africa appear to be the most congenial climates for the successful culture and growth of the date-tree. In some of those countries there are extensive groves of them, furnishing employment and wealth to the generally indolent natives. The stem is not so lofty as some of the other palms, but it is comparatively much thicker and very rugged from the persisting bases of the fallen fronds. When the fruit are ripe, they are shaken from the pendant spadix by one man, while others hold a cloth, extended below, to receive the falling fruit. These are afterwards sorted and prepared for packing in jars or sale.

Young date-trees may be raised from of the imported fruit; and as they have ded and persisting foliage, they add an variety to the stove collection. If planted ical conservatory, and allowed time and sp is no doubt but they would flower and fru country, which would, at least, be a great to our botanists.

The date-palm is one of the noblest adorn the solitary waste, and the most u man has converted to the purposes of nutr comfort. In the forest the eye recognises palm, while the remainder of the vegetabl lose their individuality in the confusion teints and forms. The presence of the p unerring sign of water; hence the weary in their journeyings through the wildern water where they found palm-trees."

USEFUL KNOWLEDGE.

ECONOMY IN LINEN-WASHING.

A small quantity of *pipe-clay* dissolved in the water employed for washing, gives the dirtiest linen the appearance of having been bleached, and cleans them thoroughly with about onehalf of the labour, and a saving of full onefourth of the soap. The proper method is to dissolve a little of the pipe-clay with the warm water in the washing-tub, or to rub a little of it, together with the soap, on the article to be washed. The process should be repeated as often as required, till the articles to be washed are thoroughly clean. The peculiar advantage of employing this article with the soap is, that it gives the *hardest* water almost the softness of rain-water. Any person can bring this to the proof by trying it on their hands when very dirty, and they may do it without any fear of the skin being injured; on the contrary, thev will find it much softened by the process.

STAINING WOOD.

To stain wood red, take two ounces of Brazil-wood and two ounces of potash; mix them with a quart of water, and let the composition stand in a warm place for several days, stirring it occasionally; with this liquor, made boiling hot, brush over the wood, till the desired depth of colour is obtained; then with another brush, brush over the wood, while yet wet, with a solution of alum, in the proportion of two ounces of alum to a quart of water.

For a pink or rose red, use double the quantity of potash.

For a less bright red, dissolve an ounce of dragon's blood in a pint of spirits of wine, and brush over the wood with the tincture till the stain appear to be as strong as is desired; but this is, in fact, rather lacquering than staining.

For a pink or rose red, add to a gallon of the above infusion of Brazil-wood two additional ounces of the pearl-ashes, and use it as was before directed: but it is necessary, in this case, to brush the wood over with the alum-water. By increasing the proportion of pearl-ashes, the red may be rendered yet paler; but it is proper, when more than this quantity is added, to make the alum-water stronger.

To stain wood green, dissolve verdigris in vinegar, or crystals of verdigris in water, and brush over the wood with the hot solution.

To stain wood blue, dissolve copper in diluted nitrick acid, and brush it while hot several times over the wood; then make a solution of pearl-ashes, in the proportion of two ounces to a pint of water, and brush over the stain made with the solution by copper till the colour be perfectly blue.

The green stain made as above with verdigris may be changed to a blue by the solution of pearl-ashes. The sulphate of indigo, which may be had, ready prepared, of the dyers, will, when diluted with water, make a blue stain.

The sulphate of indigo, which may be had, ready prepared, of the dyers, will, when diluted with water, make a blue stain.

To stain wood black, brush the wood several times with a decoction of logwood, then several times with common ink.

To make a very fine black, brush over the wood with a solution of copper in nitrick acid as for blue, and afterwards with logwood, till all the greenness of the copper solution is gone.

To stain wood purple, take one ounce of logwood and two drachms of Brazil-wood; boil them together in a quart of water over a moderate fire. When one half of the fluid is evaporated, strain the decoction, and brush it several times over the wood. After the wood is dry, brush it over with a solution of a drachm of pearl-ashes in a pint of water.

To stain wood yellow, infuse an ounce of turmerick in a pint of spirits of wine, and let the mixture stand for several days closely covered, shaking it occasionally. Brush over the wood this infusion. A reddish yellow may be given to the colour by the addition of a little gum tragacanth. Diluted nitrick acid will produce a similar colour.

MAKING YEAST.

Procure three vessels of different sizes, one capable of holding two quarts, the other three or four, and the third five or six. Boil a quarter of a peck of malt, for about eight or ten minutes, in three pints of water; and, when a quart is poured off from the grains, let it stand in a cool place till not quite cold but retaining the degree of heat which the brewers find proper for commencing fermentation. Then remove the vesssel into some situation near the fire, where the thermometer stands between 70° and 80°, and there let it remain till the fermentation begins, which will be in about thirty hours; and then two quarts more of a like decoction of malt when cool, and stir it well in the larger-sized vessel; then proceed as before; after which add an equal quantity more, and mix all in the largest vessel, and it will produce yeast sufficient for a brewing of forty gallons.

TIN ALLOYS.

Tin and arsenick may be alloyed by fusion. The alloy is white, harder and more sonorous than tin. Tin and antimony may be united together in various proportions. Equal parts of tin and molybdenum melt into a blackish-gray, granular, brittle, soft mass. Tin does not combine readily with iron. An alloy, however, may be formed by fusing them in a close crucible, completely covered from the external air. Tin and zinc may be easily combined by fusion. This alloy is often the principal ingredient in the compound called *pewter*. Lead and tin may be combined in any proportion by fusion. This alloy is harder, and possesses much more tenacity than tin; and these qualities are at a maximum when the alloy is composed of three parts of tin and one of lead.

The presence of tin seems to prevent, in a great measure, the noxious qualities of the lead from becoming sensible when food is dressed in vessels of this mixture. This process is often employed to tin copper vessels. Vinegar and lemon-juice, when boiled long in such vessels, dissolve a small portion of tin, but no lead, the presence of the former metal uniformly preventing the latter from being acted on.

MISCELLANY.

MANUFACTURES OF SPRINGFIELD.

In obedience to a law of the last legislature, the assessors of this town have recently collected its principal manufacturing statisticks. From the statisticks of all the towns of the commonwealth, the secretary of the state will prepare an interesting and valuable document. As soon as we can obtain the statisticks of the county, we shall publish them.

Cotton Manufacture. Seven mills—four at Chicopee factory, and three at Cabotville—have 35,026 spindles, consume annually 3,495,000 pounds of cotton, make 11,062,000 yards of cloth, of the gross value of $1,089,500. They employ 330 males and 1300 females. The capital stock is $1,400,000. About 29,000 gallons of oil are consumed in manufacturing purposes.

United States Armory. Capital invested, including lands, buildings, dams, bridges, &c., $210,133—in machinery $50,000—in ordnance, military stores, and stock unmanufactured, $80,000. Annual expenditures, $180,000—14,000 muskets annually made, at an average cost of $11,007. Finished muskets in store, 170,000, of the estimated value of $2,040,004—260 men are employed, and 1373 gallons of oil are annually used.

Paper Mills—four—consumes 400 tuns of stock annually, and make $200,000 worth of paper—males employed, 75, females, 150. Capital, $120,000.

Cotton Machinery—80 hands employed, who manufacture to the value of $60,000 annually.

Shuttle and Bobbin Factory—make $4,500 worth, with six hands.

Paper Machinery—10 hands, $12,000 worth annually made.

Hardware and Cutlery—value of goods manufactured, $51,000—capital employed, $23,700—hands 71.

Sword Factory and Cutlery—capital $30,000—hands employed, 35—gross value manufactured, $50,000.

Brass Cannon—hands employed, 25—gross value of the manufacture, $50,000.

Cochran Rifles—1800 made by 18 hands—capital, $8000.

Card Manufacture—capital, $32,000—19 hands employed—$40,000 worth annually manufactured.

Boots and Shoes—boots, 2,275 pairs—shoes, 13,700 made annually—value, $16,050—males employed, 45, females, 11.

Tanneries—1860 hides tanned annually—value, $10,200.

Hats—1500—value, $4,500.

Tin Ware—manufactured in a year, $15,000 value—14 hands, and $12,000 capital.

Stoves—manufactured in a year, $12,000—capital, $9000—hands employed, six.

Joiner's Tools—to the value of $12,000 a year—made by 19 hands, capital, $5000.

Furnaces—3, make annually 500 tuns of castings, of the value of $43,800—hands employed, 30—capital, $35,000.

Chairs and Cabinet Ware—hands, 28, who manufacture annually, $16,000 worth.

Ploughs—200 made—value, $13,000.

Sheep—1300—average fleece, three and a
pounds to a sheep—making 4500 pounds.

Springfield Republica

ADVANTAGES OF TOOLS.

"To arrange twenty thousand needles thrown
miscuously into a box, mixed and entangled
each other in every possible direction, in suc
form that they shall be all parallel to each ot
would, at first sight, appear a most tedious occu
tion; in fact if each needle were to be separa
individually, many hours must be consumed in
process. Yet this is an operation which must
performed many times in the manufacture of need
and it is accomplished in a few minutes by a
simple *tool*, nothing more being requisite th
small flat tray of sheet iron, slightly concave at
bottom. The needles are placed in it and shak
a peculiar manner, by throwing them up a very l
and giving at the same time a slight longitu
motion to the tray. The shape of the needles
sists their arrangement; for if two needles
each other (unless, which is exceedingly imp
ble, they happen to be precisely balanced) they
when they fall on the bottom of the tray, te
place themselves side by side, and the hollow
of the tray assists this disposition. As they ha
projection in any part to impede this tendenc
to entangle each other, they are, by continuall
king, arranged lengthwise, in three or four mi
The direction of the shake is now changed, th
dles are but little thrown up, but the tray is s
endwise; the result of which is that in a min
two the needles which were previously arr
endwise become heaped up in a wall, with
ends against the extremity of the tray. Th
now removed by hundreds at a time, by raisin
with a broad iron spatula, on which they are
ed by the fore-finger of the left hand. Duri
progress of the needles toward their finished
this parallel arrangement must be repeated
times; and, unless a cheap and expeditious
had been devised, the expense of manufacturi
dles would have been considerably enhanced

"Another process in the art of making
furnishes an example of one of the simplest
vances which can come under the denomin
a *tool*. After the needles have been arrange
manner just described, it is necessary to
them into two parcels, in order that their poi
be all in one direction. This is usually
women and children. The needles are plac
wise in a heap, on a table, in front of each
just as they are arranged by the process ab
scribed. From five to ten are rolled towa
person by the forefinger of the left hand; t
rates them a very small space from each ot
each in its turn is pushed lengthwise to the
to the left, according as its eye is on the rig
left hand. This is the usual process, and i
needle passes individually under the finge
operator. A small alteration expedites the
considerably; the child puts on the forefin
right hand a small cloth cap or finger-stall, an
out of the heap from six to twelve needles,
them down by the forefinger of the left ha
he presses the forefinger of the right ha

against their ends: those which have the points towards the right hand stick into the finger-stall; and the child, removing the finger of the left hand, slightly raises the needles sticking into the cloth, and then pushes them toward the left side. Those needles which had their eyes on the right hand do not stick into the finger-cover, and are pushed to the heap on the right side previously to the repetition of this process. By means of this simple contrivance each movement of the finger, from one side to the other, carries five or six needles to their proper heap; whereas, in the former method, frequently only one was moved, and rarely more than two or three were transported at one movement to their place."

FRECKLES.

Freckles are either natural, or proceed accidentally from the jaundice, or the action of the sun upon the part. Heat, or a sudden change of the weather, will often cause the skin to appear of a darker colour than natural, and thereby produce what is called *tan*, *sunburn*, &c., which seem to differ only in degree, and usually disappear in winter. Persons of a fine complexion, and those whose hair is red, are the most subject to freckles, especially in those parts which they expose to the air.

The origin of freckles has been thus explained: in the spring, the skin, from the warm covering which the body has had in winter, and from various other causes, is peculiarly sensitive. The heat of the sunbeams now draws out drops of moisture, which do not dry as rapidly as in summer. These drops operate like a convex glass, to concentrate the rays, which are thus made to act powerfully on the *rete malpighii*, and the carbon which it contains is half acidified, and this substance, in this state, always has a dark colour. In the same manner arises the dark teint which the skin in general assumes in summer, and which fire communicates to artisans who labour constantly in its immediate vicinity. The only bad effect of freckles is, that they induce ladies to keep themselves shut up from the influence of the weather, or to apply injurious washes to the face to remove them.

SPONGE.

Sponge is a marine production, generally to be met with in the shops in pieces only. Its texture is cavernous and porous. Its great elasticity, and its property of imbibing and as readily parting with a large quantity of water, render it useful. Sponge is to be chosen as light as possible, perfectly clean, and free from stone, of as pale a colour as may be, with small holes, and fine and soft to the touch. It grows in the Archipelago, at considerable depths, on the rocks about some of the islands there; and multitudes of people make a trade of diving for it. It is also common in the Mediterranean and many other seas, though in general browner or yellower, and not so fine as that of the Archipelago. It adheres in large masses to rocks and stones, sometimes to large shells, and is either round, flat, or holow like a funnel. There has been much dispute among naturalists concerning the real nature of the sponge.

To bleach sponge and render it white, it is necessary to soak it in cold water; but, if it does not become soft, it must be immersed in boiling water; but this should if possible be avoided, for it has an injurious effect upon the sponge, particularly in cooling; it causes it to shrink and to become hard, and so tough as to prevent its being bleached; but, if the sponge be soaked in cold water, that water should be changed three or four times every day, and every time the water is drawn off the sponge should be pressed perfectly dry; this process being repeated for five or six days, it will, at the expiration of that time, be ready for bleaching.

If the sponge, as is frequently the case, should contain small pieces of chalk and shells, which cannot be extracted without tearing it, the sponge must be soaked for twenty-four hours in muriatick acid, with twenty parts of water, which will cause an effervescence to take place, and carbonick acid gas to be liberated, when the shells and chalk will become perfectly dissolved; after that it must be carefully washed in fresh water, and immersed in weak sulphurick acid, the specifick gravity of which must be 1.024, or four degrees on the hydrometer of Beaumé. The immersion of the sponge in this acid should continue for about eight days, but it must occasionally be pressed dry and thoroughly washed. After having been perfectly washed and cleaned, it should be sprinkled with rose-water to give it a pleasant smell which completes the process.

THE BATTLE-FIELD.—By W. C. Bryant.

Once this soft turf, this rivulet's sands,
  Were trampled by a hurrying crowd,
And fiery hearts and armed hands
  Encountered in the battle cloud.

Ah, never shall the land forget
  How gushed the life-blood of her brave—
Gushed, warm with hope and valour yet,
  Upon the soil they fought to save.

Now all is calm and fresh and still;
  Alone the chirp of flitting bird,
And talk of children on the hill,
  And bell of wandering kine, are heard.

No solemn host goes trailing by
  The black-mouthed gun and staggering wain;
Men start not at the battle-cry—
  Oh, be it never heard again!

Soon rested those who fought—but thou,
  Who minglest in the harder strife
For truths which men receive not now—
  Thy warfare only ends with life.

A friendless warfare! lingering long
Through weary day and weary year;
A wild and many-weaponed throng
  Hang on thy front and flank and rear.

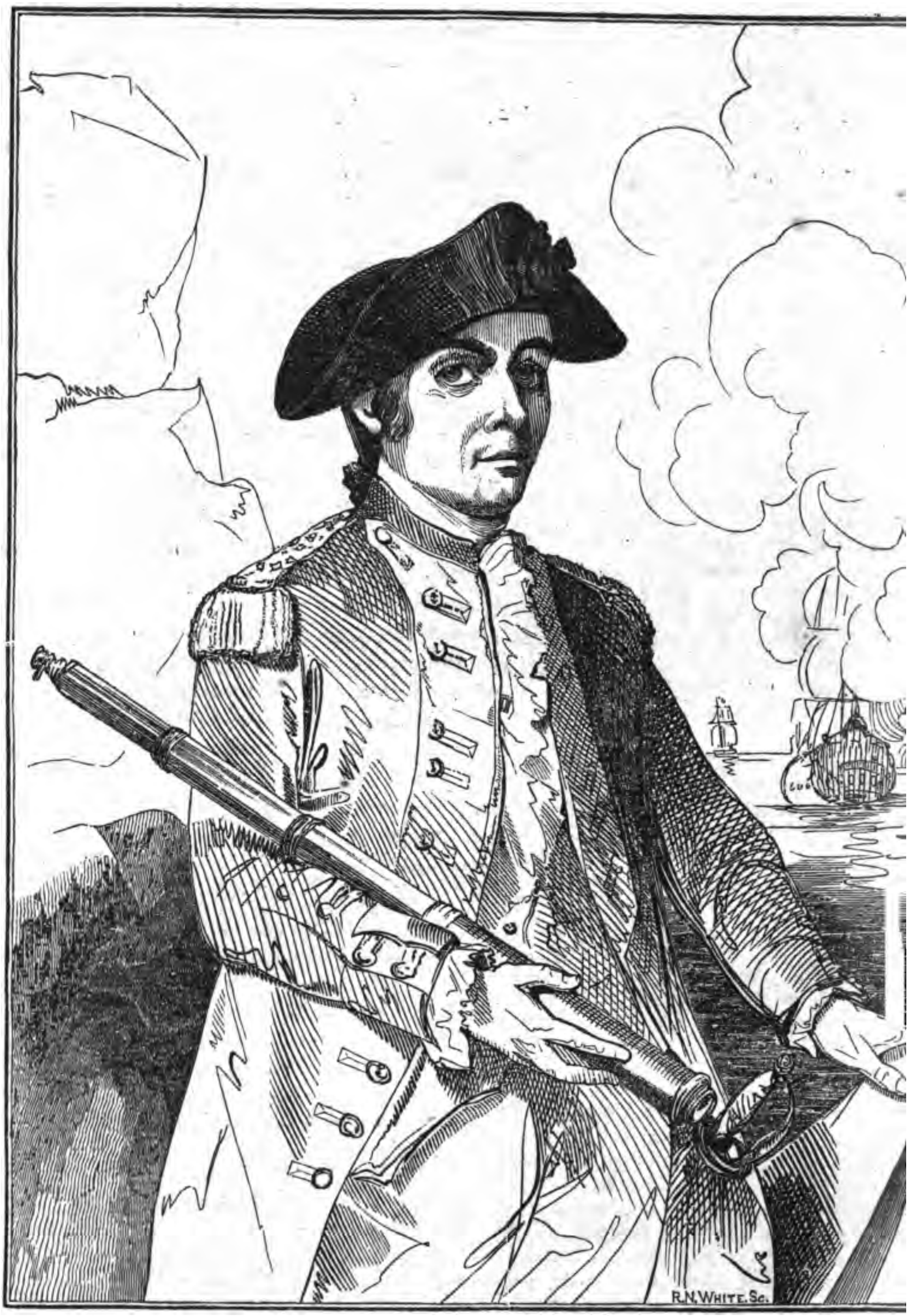
Yet nerve thy spirit to the proof,
  And blench not at thy chosen lot!
The timid good may stand aloof,
  The sage may frown—yet faint thou not!

Nor heed the shaft too surely cast,
  The hissing, stinging bolt of scorn;
For with thy side shall dwell, at last,
  The victory of endurance born.

Truth, crushed to earth, shall rise again;
  Th' eternal years of God are hers;
But Errour, wounded, writhes with pain,
  And dies among his worshippers.

Yea, though thou lie upon the dust,
  When those who helped thee flee in fear,
Die full of hope and manly trust,
  Like those who fell in battle here;

Another hand thy sword shall wield,
  Another hand the standard wave,
Till from the trumpet's mouth is pealed
  The blast of triumph o'er thy grave.



The Chev PAUL JONES

JOHN PAUL JONES.

It would be impossible within our limits, to do justice to this most extraordinary man, whose exertions, in the dark hours of our country's peril, entitle him to the gratitude of every American.

John Paul was born at Arbigland, in Scotland, on the sixth of July, 1747, and the scenery and associations of his birthplace, and its vicinity, doubtless, encouraged a restless spirit of adventure, a love of change, and an ardent enthusiasm in the objects of his pursuits, which were so strikingly manifested in his life.

His first voyage was made before he was thirteen years old; and maritime pursuits brought him to America. While here his feelings became interested in the cause of the colonies, and fully prepared him for the active part he afterward took in their defence. In 1773, John Paul removed to Virginia, to attend to the affairs of his brother who had died childless and intestate. He now assumed the additional surname of Jones. On the twenty-second of December, 1775, by a resolution of Congress, Paul Jones was appointed lieutenant in the American Navy, which then consisted of the Alfred, Columbus, Andrew Doria, Sebastian Cabot, and Providence; the whole mounting one hundred guns, and manned by eleven hundred and fifty seamen; Jones was attached to the Alfred, and was the first to hoist the American flag, which was first displayed on board that vessel. On the twenty-second of February, 1778, he thus wrote to the Marine committee: "I am happy in having it in my power to congratulate you on my having seen the American flag, for the first time, recognised, in the fullest and completest manner by the flag of France." In April, 1778, his memorable visit to White Haven occurred. Time would fail us were we to recount all the various acts of bravery performed by Jones. But we must hasten to one of the bravest actions, in which Jones was ever engaged, and which we shall give in his own words, as contained in his life and correspondence, edited by Miss Jeanette Taylor.

His official account of the battle between the Bon Homme Richard and the Serapis, is as follows:—

"On the 21st, we saw and chased two sail off Flamborough Head; the Pallas chased in the N. E. quarter, while the Bon Homme Richard, followed by the Vengeance, chased in the S. W.; the one I chased, a brigantine collier in ballast, belonging to Scarborough, was soon taken, and sunk immediately afterward, as a fleet then appeared to the southward. This was so late in the day, that I could not come up with the fleet before night; at length, however, I got so near one of them as to force her to run ashore between Flamborough Head and the Spurn. Soon after I took another, a brigantine from Holland, belonging to Sunderland, and at daylight next morning, seeing a fleet steering towards me from the Spurn, I imagined them to be a convoy bound from
for Leith, which had been for some time
One of them had a pendant hoisted, and ap
be a ship of force. They had not, howeve
to come on, but kept back, all except the o
seemed to be armed, and that one also ke
windward, very near the land, and on the
dangerous shoals, where I could not with
proach. This induced me to make a signa
lot, and soon afterward two pilot-boats
They informed me that a ship that wore a
was an armed merchantman, and that a kin
lay there in sight, at anchor, within the
waiting to take under convoy a number of
ships bound to the northward. The pilots
the Bon Homme Richard to be an Englis
war, and consequently communicated to m
vate signal which they had been required
I endeavoured by this means to decoy the
of the port; but the wind then changing,
the tide, becoming unfavourable for them, t
tion had not the desired effect, and they
back. The entrance of the Humber is ex
difficult and dangerous, and as the Pallas w
sight, I thought it imprudent to remain o
trance; therefore steered out again to join t
off Flamborough Head. In the night we
chased two ships until three o'clock in t
ing, when, being at a very small dista
them, I made the private signal of reconn
which I had given to each captain before
from Groix: one half of the answer only wa
ed. In this position both sides lay to till
when the ships proved to be the *Allianc*
Pallas.

"On the morning of that day, the 23d,
from Holland not being in sight, we chased
tine, that appeared laying to, to windward
noon, we saw and chased a large ship that
coming round Flamborough Head, from t
ward, and at the same time I manned and a
of the pilot boats to send in pursuit of the b
which now appeared to be the vessel that I
ed ashore. Soon after this, a fleet of forty
appeared off Flamborough Head, bearing
This induced me to abandon the single sh
had then anchored in Burlington Bay; I al
back the pilot boat, and hoisted a signal for
chase. When the fleet discovered us beari
all the merchant ships crowded sail toward t
The two ships of war that protected the fle
same time steered from the land, and made t
sition for battle. In approaching the enemy,
ed every possible sail, and made the signal
line of battle, to which the Alliance showed
tion. Earnest as I was for the action, I c
reach the commodore's ship until seven in t
ing, being then within pistol-shot, when h
the Bon Homme Richard. We answered
firing a whole broadside.

"The battle being thus begun, was contin
unremitting fury. Every method was prac
both sides to gain an advantage, and rake eac
and I must confess that the enemy's ship, bei
more manageable than the Bon Homme
gained thereby several times an advantageo
tion, in spite of my best endeavours to pr
As I had to deal with an enemy of greatly

force, I was under the necessity of closing with him, to prevent the advantage which he had over me in point of manœuvre. It was my intention to lay the Bon Homme Richard athwart the enemy's bow; but as that operation required great dexterity in the management of both sails and helm, and some of our braces being shot away, it did not exactly succeed to my wish. The enemy's bowsprit, however, came over the Bon Homme Richard's poop, by the mizzen-mast, and I made both ships fast together in that situation, which by the action of the wind on the enemy's sails, forced her stern close to the Bon Homme Richard's bow, so that the ships lay square alongside of each other, the yards being all entangled, and the cannon of each ship touching the opponents. When this position took place, it was eight o'clock, previous to which the Bon Homme Richard had received sundry eighteen-pound shots below the water, and leaked very much. My battery of twelve-pounders, on which I had placed my chief dependance, being commanded by Lieutenant Dale and Colonel Weibert, and manned principally with American seamen and French volunteers, was entirely silenced and abandoned. As to the six old eighteen-pounders that formed the battery of the lower gun-deck, they did no service whatever, except firing eight shots in all. Two out of three of them burst at the first fire, and killed almost all the men who were stationed to manage them. Before this time, too, Colonel de Chamillard, who commanded a party of twenty soldiers on the poop, had abandoned that station after having lost some of his men. I had now only two pieces of cannon, (nine-pounders,) on the quarter-deck, that were not silenced, and not one of the heavier cannon was fired during the rest of the action. The purser, M. Mease, who commanded the guns on the quarter-deck, being dangerously wounded in the head, I was obliged to fill his place, and with great difficulty rallied a few men, and shifted over one of the lee quarter-deck guns, so that we afterward played three pieces of nine-pounders upon the enemy. The tops alone seconded the fire of this little battery, and held out bravely during the whole of the action, especially the maintop, where Lieutenant Stack commanded. I directed the fire of one of the three cannon against the mainmast, with double-headed shot, while the other two were exceedingly well served with grape and cannister-shot, to silence the enemy's musketry and clear her decks, which was at last effected. The enemy were, as I have since understood, on the instant of calling for quarter, when the cowardice or treachery of three of my under officers induced them to call to the enemy. The English commodore asked me if I demanded quarter, and I having answered him in the most determined negative, they renewed the battle with double fury. They were unable to stand the deck; but the fire of their cannon, especially the lower battery, which was entirely formed of ten-pounders, was incessant; both ships were set on fire in various places, and the scene was dreadful beyond the reach of language. To account for the timidity of my three under-officers, I mean the gunner, the carpenter, and the master-at-arms, I must observe, that the two first were slightly wounded, and, as the ship had received various shots under water, and one of the pumps being shot away, the carpenter expressed his fears that she would sink, and the other two concluded that she was sinking, which occasioned the gunner to run aft on the poop, without my knowledge, to strike the colours. Fortunately for me, a cannon-ball had done that before, by carrying away the ensign-staff; he was therefore reduced to the necessity of sinking, as he supposed, or of calling for quarter, and he preferred the latter.

"All this time the Bon Homme Richard had sustained the action alone, and the enemy, though much superiour in force, would have been very glad to have got clear, as appears by their own acknowledgements, and by their having let go an anchor the instant that I laid them on board, by which means they would have escaped, had I not made them well fast to the Bon Homme Richard.

"At last, at half past nine o'clock, the Alliance appeared, and I now thought the battle at an end; but, to my utter astonishment, he discharged a broadside full into the stern of the Bon Homme Richard. We called to him for God's sake to forbear firing into the Bon Homme Richard; yet they passed along the off side of the ship, and continued firing. There was no possibility of his mistaking the enemy's ship for the Bon Homme Richard, there being the most essential difference in their appearance and construction. Besides, it was then full moonlight, and the sides of the Bon Homme Richard were all black, while the sides of the prize were all yellow. Yet, for the greater security, I showed the signal of our reconnoissance, by putting out three lanterns, one at the head, another at the stern, and the third in the middle, in a horizontal line. Every tongue cried that he was firing into the wrong ship, but nothing availed; he passed round, firing into the Bon Homme Richard's head, stern, and broadside, and by one of his volleys killed several of my best men, and mortally wounded a good officer on the forecastle. My situation was really deplorable; the Bon Homme Richard received various shots under water from the Alliance; the leak gained on the pumps, and the fire increased much on board both ships. Some officers persuaded me to strike, of whose courage and good sense I entertain a high opinion. My treacherous master-at-arms let loose all my prisoners without my knowledge, and my prospects became gloomy indeed. I would not, however, give up the point. The enemy's mainmast began to shake, their firing decreased fast, ours rather increased, and the British colours were struck at half an hour past ten o'clock.

"This prize proved to be the British ship of war, the Serapis, a new ship of forty-four guns, built on the most approved construction, with two complete batteries, one of them of eighteen-pounders, and commanded by the brave Commodore Richard Pearson. I had yet two enemies to encounter, far more formidable than the Britons, I mean fire and water. The Serapis was attacked only by the first, but the Bon Homme Richard was assailed by both; there was five feet water in the hold, and though it was moderate from the explosion of so much gunpowder, yet the three pumps that remained could with difficulty only keep the water from gaining. The fire broke out in various parts of the ship, in spite of all the water that could be thrown in to quench it, and at length broke out as low as the powder-magazine, and within a few inches of the powder. In that dilemma, I took out the powder upon deck, ready to be thrown overboard at the last extremity, and it was ten o'clock the next day, the 24th, before the fire was entirely extinguished. With respect to the situation of the Bon Homme Richard, the rudder was cut entirely off, the stern-frame and transoms were almost entirely cut away, and the timbers by the lower deck, especially from the mainmast toward the stern, being greatly decayed with age, were mangled beyond my power of description, and a person must have been an eyewitness to form a just idea of the tremendous scene of carnage, wreck, and ruin, which everywhere appeared. Humanity cannot but recoil from the prospect of such finished horrour, and lament that war should be capable of producing such fatal consequences.

"After the carpenters, as well as Captain Cottineau and other men of sense, had well examined and surveyed the ship, (which was not finished before five in the evening,) I found every person to be convinced that it was impossible to keep the Bon Homme Richard afloat so as to reach a port, if the wind should increase, it being then only a very moderate breeze. I had but little time to remove my wounded, which now became unavoidable, and which was effected in the course of the night and next morning. I was determined to keep the Bon Homme Richard afloat, and, if possible, to bring her into port. For that purpose, the first lieutenant of the Pallas continued on board with a party of men to attend the pumps, with boats in waiting ready to take them on board, in case the water should gain on them too fast. The wind augmented in the night, and the next day, the 25th, so that it was impossible to prevent the good old ship from sinking. They did not abandon her till after nine o'clock; the water was then up to the lower deck, and a little after ten I saw, with inexpressible grief, the last glimpse of the *Bon Homme Richard*. No lives were lost with the ship, but it was impossible to save the stores of any sort whatever. I lost even the best part of my clothes, books, and papers; and several of my officers lost all their clothes and effects.

"Having thus endeavoured to give a clear and simple relation of the circumstances and events that have attended the little armament under my command, I shall freely submit my conduct therein to the censure of my superiours and the impartial publick. I beg leave, however, to observe, that the force put under my command was far from being well composed, and as the great majority of the actors in it have appeared bent on the pursuit of interest only, I am exceedingly sorry that they and I have been at all concerned.

"Captain Cottineau engaged the Countess of Scarborough, and took her, after an hour's action, while the Bon Homme Richard engaged the Serapis. The Countess of Scarborough is an armed ship of twenty six-pounders, and was commanded by a king's officer. In the action, the Countess of Scarborough and the Serapis were at a considerable distance asunder; and the Alliance, as I am informed, fired into the Pallas and killed some men. If it should be asked, why the convoy was suffered to escape, I must answer, that I was myself in no condition to pursue, and that none of the rest showed any inclination; not even Mr. Ricot, who had held off at a distance to windward during the whole action, and withheld by force the pilot-boat with my lieutenant and fifteen men. The Allian
in a state to pursue the fleet, not havin
gle man wounded, or a single shot firec
the Serapis, and only three that did ex
the Countess of Scarborough, at such
that one stuck in the side, and the otl
touched, and then dropped into the wate
liance killed one man only on board
As Captain de Cottineau charged himse
ning and securing the prisoners of the
Scarborough, I think the escape of the
cannot so well be charged to his accour

"I should have mentioned, that the n
mizzentopmast of the Serapis fell ove
after the captain had come on board the
Richard."

AMERICAN ANTIQUI

We announced in the preceding vol
Family Magazine, that the Royal Socie
ern Antiquaries, at Copenhagen, were
lish a work entitled, "Antiquitates
which would be extremely interesting tc
ries, and which it was thought, would
upon the engraved rocks, and other anti
in different parts of our country. The b
received, and is now for sale in Ne
William Jackson.

"It is a magnificent quarto, contai
sheets, and eighteen large engravings
Facsimiles, some of which represent ent
the best of the MSS. employed on the p
sion, in order to give a clear and complete
nature; by dint of much pains the artist h
in representing them with great accur
regards the outlines of the letters, whicl
much faded away and difficult to disc
the colour of the different parchment
four *Maps*, viz.: 1. One of *Ancient I*
the first ever made, representing its re
vision about the year 1000, constructed
landick geographer Biörn Gunnlaughs
aid of Finn Magnusen and other Icelar
ars. 2. *A Map of the district of Ju*
Greenland, probably comprising the Ey
it was called, (also important in a geogr
of view,) constructed for the Society by
iam A. Graah, R. N., from observations
urements made by him in the country
from such other authorities as were av
this map are noted the numerous sites
churches and houses of the ancient col
as these are now known. 3. *A Gene*
the Northern Icy ocean, and of the C
Atlantick for the purpose of exhibiting a
voyages of discovery. Here is delineat
ern part of North America, together with
of countries, capes, firths, islands, and
Lancaster sound to Florida, as were
the ancient Northmen. 4. *A Map of V*
with the ancient Northern appellation

six *Engravings* being delineations, and partly prospects of the Greenland and American monuments from the middle ages treated of in the work; several of these are very remarkable, and, for the most part, hitherto quite unknown, such as Inscriptions on Rocks in Massachusetts and Rhode Island, which from the disquisitions contained in the work, would seem to have been partly intended to indicate the *Landnam*, or the occupation of the country, effected by the ancient Northmen."

The text, which is accompanied by a Danish and also a Latin translation, embraces the following:—

"First, the historical accounts of Eric the Red, and the Greenlanders, extracted—and now for the first time accurately published—from the celebrated Codex Flateyensis, particularly concerning Biarne Heriulfson's and Leif Ericson's first discovery of the American Islands and Coasts, and the several voyages hither, performed by Leif's brothers and sister. Next the Saga of Thorfinn Thordson surnamed Karlsefne, descended from Irish, Scottish, Norwegian, Swedish, and Danish ancestors, chiefly taken from two ancient MSS. never before edited, and in fact not previously known to the Literati, the one of which is supposed to be partly a genuine autograph of the celebrated Hauk Erlendson, Lawman of Iceland, well known as a compiler one of the celebrated Recensions of the Landnamabook. This very remarkable Saga contains detailed accounts of Thorfinn Karlsefne and his company's three years voyages and residence in America, whereby an entirely new light is diffused over this subject hitherto so little known. The only knowledge that Torfæus had of this Saga, which he imagined to be lost, was derived from some corrupted extracts of it contained in the collection of materials for the history of ancient Greenland, left by the Iceland Farmer, Biörn Johnson of Skardso. It is now for the first time submitted to the literary world in a complete form. The work here announced moreover contains every thing else that the Society has been able to collect and discover relating to that knowledge of the New World which our forefathers obtained from the early discoveries and researches of the Northmen. Among these we may mention, 1. Adam of Bremen's accounts of Vineland (in America) written in the eleventh century, being in fact communicated to him by the Danish King Sweyn Estrithson, and compiled from authentick accounts furnished to him by Danes, and now for the first time published from the excellent Codex in the Imperial Library at Vienna, of which a Facsimile has been transmitted to the Society by the Chief of the Library, Count Dietrichstein. 2. Are Frode's account of Vineland, written in the same or in the following century; and also, 3, of the eminent Icelandick chief Are Marson, one of his own ancestors, who in the year 983 was driven to a part of America situated near Vineland, then called Hvitramannaland or Great Ireland, whose inhabitants (of Irish origin) prevented him from returning, but at the same time treated him with great respect. 4. Other ancient accounts respecting the Icelandick hero Biörn Asbrandson, in his day one of the Iomsburg Warriours under Palnatoke, and fighting along with them in the battle of Fyrisval in Sweden; he also in the year 999 repaired to one of the coasts of America, where he was detained in the same manner, but resided there as chief over the natives for about thirty years. 5. Account of an Icelandick mariner, Gudleif Gudlaughson, who was driven to the same coast in the year 1027, and who was rescued from death or captivity by his abovementioned countryman. 6. Extracts from the Annals of Iceland of the middle ages, in so far as they relate to America, particularly Bishop Eric's voyage to Vineland in 1121; the discovery of new countries by the Icelanders in the Western ocean in 1285; an expedition from Norway and Iceland in the year 1288–90; and also a trading voyage from the ancient colony in Greenland to Markland in America in 1347, as recorded by contemporaries. 7. Ancient accounts of the most northern districts of Greenland and America, chiefly visited by the Northmen for the purpose of hunting and fishing; among these a very remarkable account (from a letter of a Greenland clergyman) of a Voyage of Discovery undertaken by some clergymen from the Bishoprick of Garder in Greenland, in the year 1266, being (as is corroborated by an astronomical observation) through Lancaster sound and Barrow straits to regions which in our days have for the first time been made correctly known through the zealous exertions of Sir William Parry, Sir John Ross, and Capt. James Clark Ross, and other British navigators. 8. Extracts from the ancient geographical works of the Icelanders, to which is added an outline taken in the 13th century representing the earth in four inhabited quarters. 9. An ancient Faroish Qväji wherein Vineland is named, and allusion is made to its connexion with Ireland.

"To which are added, I. A description accompanied by delineations and occasionally by perspective views of several *Monuments*, chiefly *Inscriptions from the middle ages*, found partly in Greenland and partly in the States of Massachusetts and Rhode Island in North America, on the one hand confirming the accounts in the Sagas, and on the other illustrated by them. II. Detailed *Geographical Inquiries* lately undertaken at the instance of the Society, whereby the sites of the regions and places named in the Sagas are explored, and are pointed out under the names by which they are now commonly known, viz., Newfoundland, Bay of St. Lawrence, Nova Scotia, and especially the states of Massachusetts and Rhode Island, and even districts more to the South, probably situated in Virginia, North Carolina, and in Florida which is supposed to be the most southerly land mentioned in the most authentick Saga accounts, although sundry of the Northern Geographers of the middle ages would seem to intimate their knowledge of the easterly direction taken by the continent of South America. They are chiefly based on the accounts in the ancient MSS, and on the explanations of the *astronomical*, *nautical*, and *geographical statements* contained in the same, which besides receive the most complete confirmation from accounts transmitted by distinguished American scholars, with whom the Society have entered into correspondence, and who, after several journeys undertaken for that object in Massachusetts and Rhode Island, have communicated accurate illustrations respecting the nature of the countries, their climate, animals, productions, etc., and have furnished the Society with descriptions and also with delineations of the ancient Monuments found there. III. *A Chronological Conspectus*, arranging under their proper dates the several voyages to America, and the most important events which occurred in that quarter of the world. IV. *An Index of Persons*, in which the names of those persons (of both sexes) who took part in the American voyages are printed in a different type. V. *A Geographical Index*, in which the same method is followed in regard to names of places mentioned in America. VI. *An Index Rerum*, containing among other things the names of the various productions of the American countries. VII. *Genealogical Tables*, showing the lineage of the most eminent of the Northern discoverers of America, continued down to our days, whereby it is demonstrated that many persons now living in Iceland, Norway, and Denmark, as also the celebrated sculptor Thorwaldsen in Rome, do actually descend from them, that is from men, who eight hundred years ago were the chiefs of the American natives, or who were at that remote period born in America."

The following will give our readers some account of the historical evidence embraced in the book, but we recommend all those who have the means, to purchase the original, and thereby encourage the publication of similar works. The price of the quarto, with the facsimiles of the manuscripts, the charts, and engravings, is eighteen dollars; and it may be purchased, as we said before, at William Jackson's, 102 Broadway, New York.

BIARNE HERIULFSON'S VOYAGE IN THE YEAR 986.

Eric the Red, in the spring of 986, emigrated from Iceland to Greenland, formed a settlement there, and fixed his residence at Brattalid in Ericsfiord. Among others who accompanied him was Heriulf Bardson, who established himself at Heriulfsnes. Biarne, the son of the latter, was at that time absent on a trading voyage to Norway; but in the course of the summer returning to Eyrar, in Iceland, and finding that his father had taken his departure, this bold navigator resolved "still to spend the following winter, like all the preceding ones, with his father," although neither he nor any of his people had ever navigated the Greenland sea. They set sail, but met with northerly winds and fogs, and, after many days' sailing, knew not whither they had been carried. At length, when the weather again cleared up, they saw a land which was without mountains, overgrown with wood, and having many gentle elevations. As this land did not correspond to the descriptions of Greenland, they left it on the larboard hand, and continued sailing two days, when they saw another land which was flat, and overgrown with wood. From thence they stood out to sea, and sailed three days with a S. W. wind, when they saw a third land, which was high and mountainous, and covered with icebergs, (*glaciers*,) they coasted along the shore, and saw that it was an island. They did not go on shore, as Biarne did not find the country to be inviting. Bearing away from this island, they stood out to sea with the same wind, and after four days' sailing with fresh gales, they reached Heriulfsnes, in Greenland.

DISCOVERIES OF LEIF ERICSON, AND SETTLEMENT OF VINELAND.

Some time after this, probably in the y
Biarne paid a visit to Eric, earl of Norway,
him of his voyage, and of the unknown lan
discovered. He was blamed by many for
ing examined these countries more accurat
his return to Greenland there was much t
undertaking a voyage of discovery. Leif,
Eric the Red, bought Biarne's ship, and eq
with a crew of thirty-five men, among wh
German, of the name of Tyrker, who had
sided with his father, and who had been
of Leif in his childhood. In the year 1
commenced the projected voyage, and cam
the land which Biarne had seen last. T
anchor and went on shore. No grass w
but every where in this country were vast i
tains, (*glaciers*,) and the intermediate space
these and the shore was, as it were, one
plain of slate; (*hella*;) the country appearin
destitute of good qualities, they called it
LAND. They put out to sea, and came t
land where they also went on shore. The
was level, (*slètt*,) and covered with wo
wheresoever they went, there were cliffs
sand, (*sand-ar hvítir*,) and a low coast, (*ó-s*
they called the country MARK-LAND, (*W*
From thence they again stood out to sea
N. E. wind, and continued sailing for two
fore they made land again. They then ca
island which lay to the eastward of the
and entered a channel between this islan
promontory projecting in an easterly (and n
direction from the mainland. They sailed we
waters where there was much ground left d
tide. Afterward they went on shore at a pla
a river, issuing from a lake, fell into the sea
brought their ship into the river, and from
into the lake, where they cast anchor. H
constructed some temporary log-huts; but a
when they had made up their mind to winte
they built large houses, afterward called
BUDIR, (*leifsbooths*.) When the buildin
completed, Leif divided his people into two
nies, who were by turns employed in keepi
at the houses, and making small excursions
purpose of exploring the country in the vici
instructions to them were, that they should
a greater distance than that they might retu
course of the same evening, and that they
not separate from one another. Leif took
also, joining the exploring party the one
remaining at the houses the other. It so h
that one day the German, Tyrker, was missi
accordingly went out with twelve men in
him, but they had not gone far from their
when they met him coming towards them.
Leif inquired why he had been so long a
at first answered in German, but they did n
stand what he said. He then said to the
Norse tongue: "I did not go much farth
have a discovery to acquaint you with; I ha
vines and grapes." He added, by way of co
that he had been born in a country where t
plenty of vines. They had now two occ
viz., to hew timber for loading the ship, an
grapes; with these last they filled the ship's

Leif gave a name to the country, and called it VINLAND, (*Vineland.*) In the spring they sailed again from thence, and returned to Greenland.

THORWALD ERICSON'S EXPEDITION TO MORE SOUTHERN REGIONS.

Leif's Vineland voyage was now a subject of frequent conversation in Greenland, and his brother Thorwald was of opinion that the country had not been sufficiently explored. He accordingly borrowed Leif's ship, and, aided by his brother's counsel and directions, commenced a voyage in the year 1002. He arrived at Leifsbooths, in Vineland, where they spent the winter, he and his crew employing themselves in fishing. In the spring of 1003 Thorwald sent a party in the ship's long-boat on a voyage of discovery southward. They found the country beautiful and well wooded, with but little space between the woods and the sea; there were likewise extensive ranges of white sand, and many islands and shallows. They found no traces of men having been there before them, excepting on an island lying to the westward, where they found a wooden shed. They did not return to Leifsbooths until the fall. In the following summer, 1004, Thorwald sailed eastward with the large ship, and then northward past a remarkable headland enclosing a bay, and which was opposite to another headland. They called it KIAL-AR-NES, (*Keel Cape.*) From thence they sailed along the eastern coast of the land, into the nearest firths, to a promontory which there projected, and which was every where overgrown with wood. There Thorwald went ashore with all his companions. He was so pleased with this place, that he exclaimed: "This is beautiful! and here I should like well to fix my dwelling!" Afterward, when when they were preparing to go on board, they observed on the sandy beach, within the promontory, three hillocks, and repairing thither, they found three canoes, under each of which were three Skrellings, (Esquimaux;) they came to blows with the latter, and killed eight, but the ninth escaped with his canoe. Afterward a countless number issued forth against them from the interiour of the bay. They endeavoured to protect themselves by raising battle-screens on the ship's side. The Skrellings continued shooting at them for a while, and then retired. Thorwald was wounded by an arrow under the arm, and finding that the wound was mortal, he said, "I now advise you to prepare for your departure as soon as possible, but me ye shall bring to the promontory, where I thought it good to dwell; it may be that it was a prophetick word that fell from my mouth about my abiding there for a season; there shall ye bury me, and plant a cross at my head, and another at my feet, and call the place KROSS-A-NES, (*Crossness,*) in all time coming." He died, and they did as he had ordered. Afterward, they returned to their companions at Leifsbooths, and spent the winter there; but, in the spring of 1005, they sailed again to Greenland, having important intelligence to communicate to Leif.

UNSUCCESSFUL ATTEMPT OF THORSTEIN ERICSON.

Thorstein, Eric's third son, had resolved to proceed to Vineland to fetch his brother's body. He fitted out the same ship, and selected twenty-five strong and able-bodied men for his crew: his wife Gudrida also went along with him. They were tossed about the ocean, during the whole summer, and knew not whither they were driven; but at the close of the first week of winter they landed at Lysufiord, in the western settlement of Greenland. There Thorstein died during the winter; and, in the spring, Gudrida returned again to Ericsfiord.

SETTLEMENT EFFECTED IN VINELAND, BY THORFINN.

In the following summer, 1006, there arrived in Greenland two ships from Iceland; the one was commanded by Thorfinn, having the very significant surname of Karlsefne, (i. e. one who promises or is destined to be an able or great man,) a wealthy and powerful man, of illustrious lineage, and sprung from Danish, Norwegian, Swedish, Irish, and Scottish ancestors, some of whom were kings, or of royal descent. He was accompanied by Snorre Thorbrandson, who was also a man of distinguished lineage. The other ship was commanded by Biarne Grimolfson, of Breidefiord, and Thorhall Gamlason, of Austfiord. They kept the festival of Yule, or Christmas, at Brattalid. Thorfinn became enamoured of Gudrida, and obtained the consent of her brother-in-law, Leif; and their marriage was celebrated in the course of the winter. On this, as on former occasions, the voyage to Vineland formed a favourite theme of conversation, and Thorfinn was urged both by his wife and others to undertake such a voyage. It was accordingly resolved on. In the spring of 1007, Karlsefne and Snorre fitted out their ship, and Biarne and Thorhall likewise equipped theirs. A third ship (being that in which Gudrida's father, Thorbiörn, had formerly come to Greenland) was commanded by Thorward, who was married to Freydisa, a natural daughter of Eric the Red; and on board the ship was also a man of the name of Thorhall, who had long served Eric as huntsman in summer, and as house-steward in winter, and who had much acquaintance with the uncolonized parts of Greenland. The whole expedition consisted of one hundred and sixty men; and they took with them all kinds of live stock, it being their intention to establish a colony, if possible. They sailed first to the Westerbygd, and afterward to Biarney, (*Disco.*) From thence they sailed in a southerly direction to HELLULAND, where they found many foxes; and again two days in a southerly direction to MARK-LAND, a country overgrown with wood, and plentifully stocked with animals. Leaving this, they continued in a S. W. direction for a long time, having the land to starboard, until they at length came to KIAL-AR-NES, where there were trackless deserts and long beaches and sands, called by them FURDU-STRAND-IR. Passing these, they found the land indented by inlets. They had two Scots with them Hake and Hekia, whom Leif had formerly received from the Norwegian king, Olaf Tryggvason, and who were very swift of foot. They put them on shore, recommending them to proceed in a S. W. direction, and explore the country. After the lapse of three days they returned, bringing with them some grapes and some ears of wheat, which grew wild in that region.

(To be continued in our next.)

NATURAL PHILOSOPHY.

MECHANICAL POWERS.

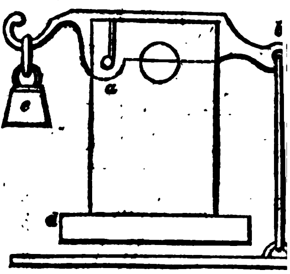
By the *mechanical powers* are signified the simple machines to which all machines, however complex, may be referred. They are essentially three in number, but usually considered as six:

I. The LEVER and the WHEEL and AXIS.
II. The INCLINED PLANE, the SCREW, the WEDGE.
III. The PULLEY.

The *lever* is a bar, resting on a support, called a *fulcrum* or prop, for the purpose of raising, by a *power* applied to one end, a *weight* at the other. An iron crow, used by workmen to raise heavy stones, affords a good instance of a lever. The stone is the weight; the block on which the crow rests is the fulcrum; the strength of the men, the power. To gain any advantage by its use, the fulcrum must be nearer to the weight than to the power. If the distance from the power to the fulcrum be five times greater than the distance from the weight to the fulcrum, a force of one pound in the power will balance a pressure of five pounds in the weight. But in this case the end of the long arm of the lever will, as it turns on the prop, pass through a space five times greater than that of the short arm. By such a lever a man could raise one thousand pounds with the same exertion as would be required to raise two hundred without a lever, but he could raise it only a fifth part so high in the same time. What he would gain therefore in power would be lost in time. In theory, a lever is considered inflexible and without weight. There is an equilibrium when the power and weight are inversely as their distances from the fulcrum.

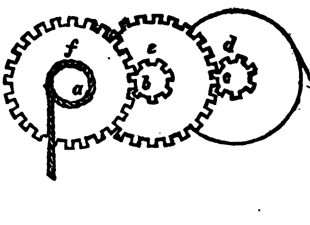
Leverage is the distance of the power from the fulcrum. The *mechanical advantage* or *purchase* is proportional to this distance compared with that of the weight from the fulcrum. Levers are of three kinds, according to the relative position of the power, the prop, and the weight. In the first, the prop is between the power and the weight. To it belong scissors, snuffers, pincers, (in which the pivot or joint is the prop,) the handspike, the brake of a pump, &c. A hammer with its claw is a bent lever of this kind. In the second, the weight lies between the fulcrum and the power. This includes the oar, where the boat is the weight to be moved; the door, of which the hinge is the fulcrum; the wheelbarrow, nut-crackers, bellows, and the knife attached at one end, used to chip die-woods. In a lever of the third kind, the resistance is at one end and the fulcrum at the other. To this belong the pitchfork and spade, the one end being the power and the other the fulcrum, sheep-shears, with a bow at one end, giving a greater facility of motion. The bones of animals are levers of this kind, and are moved by muscles so attached as to give rapidity of motion at the pense of power. The ox-yoke is of this kind, neck of each ox being the fulcrum with referenc the exertion of the other. The stronger of oxen must have the short arm of the lever, that t may be able to pull together. So a load suppo on a pole and borne by two men must divide the unequally, if either is to be favoured. The mech ical advantage may be multiplied to any extent b combination of levers of the first kind. Such combination is used to *prove* the strength of i cables. To the lever are referred the various struments employed for weighing. The most fect of these is the common *balance*. For en accuracy, the arms should be of precisely the sa length, and as nearly as possible inflexible, lig and strong. The axis on which it turns, and points of suspension at the ends of the arms, sho be sharp, and rest upon polished plates of steel.

The accompanying figure represents a combi tion of levers in which great power is obtained. is intended for pressing and cutting of metal. T principal lever, placed at the top of the machine, revolves on the axis or fulcrum *a*, which must be immoveable and of great strength. The point *b* is just three times as far from the axis *a* as the pressing orifice is. A rod descends from the point *b*, and carries the mechanical advantage thus obtai ed to the lever beneath, and, as that turns on an ax placed at the extremity, a pressing power applied the end of the longer arm *d* will act with an amazi force on the cutting part of the machine. T weight *e* is intended merely to raise the levers aft the power is withdrawn.



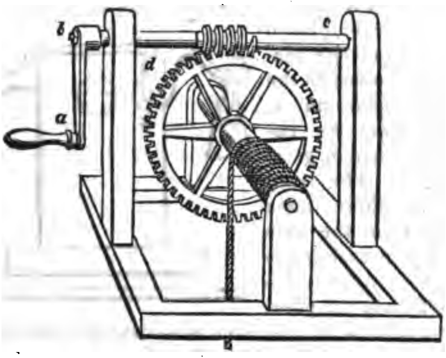
The *wheel* and *axle* consist of a wheel attached a smaller cylinder, and moving on the same axi The weight to be raised has a cord winding rou the cylinder, and the power is attached to the ci cumference of the wheel. It may be regarded as continual lever, each spoke of the wheel represen ing the long arm, and the radius of the cylinder t short arm. The mechanical advantage depends the ratio of the cylinder. In the *ship's windlas* moveable bars or handspikes are substituted for wheel. The *capstan* is a vertical wheel and ax used on board ships to weigh the anchor.

The wheel and axle may turn on different ce tres, and have their circumferences connected a made to act on each other, by means of a strap belt, or by a system of cogs or teeth. The latt plan is adopted in this arrangement, and is calle *wheel and pinion work*.



The weight to be raised is supported by a flexible cord coiled round the axis *a;* and, as the teeth of the wheel are three times as far from the centre as the cord, one pound will raise three pounds. In the wheel and pinion *e b*, a similar advantage is obtained, and nine pounds may be elevated. Passing on to the third in the series, twenty-seven pounds may be raised by a maintaining power of one pound applied by the hand.

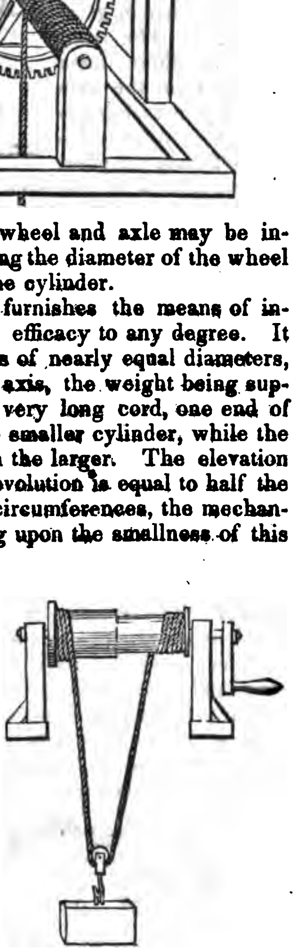
Another example, and a still more striking one, is given in the wheel and axis *a b c d*. The power is in the first instance applied at the handle *a*, which acts on the screw *b c* with great force. The screw turns the wheel *d*, and that gives motion to the small barrel. The handle at *a* will raise a weight of ten pounds at the screw, and, if that make forty revolutions to one of the wheel, four hundred pounds may be raised. It may hardly be necessary to add that, as the barrel is smaller than the wheel, the mechanical advantage is proportionably increased.



The efficacy of the wheel and axle may be increased either by enlarging the diameter of the wheel or diminishing that of the cylinder.

The *Chinese capstan* furnishes the means of increasing the mechanical efficacy to any degree. It consists of two cylinders of nearly equal diameters, turning upon the same axis, the weight being supported by the loop of a very long cord, one end of which unwinds from the smaller cylinder, while the other end is coiled upon the larger. The elevation of the weight by each revolution is equal to half the difference of the two circumferences, the mechanical advantage depending upon the smallness of this difference.

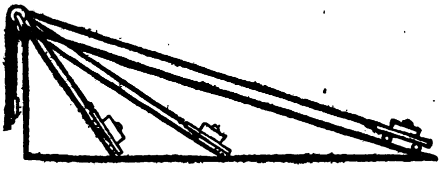
An arrangement of this kind is shown in the accompanying figure. One end of the cord coils round the first cylinder, and descending passes under the pulley to which the weight is attached. It is then carried around the smallest cylinder, and the apparatus may either be made to draw in a horizontal or vertical direction.



Inclined plane.—When a carman lays a plank from the street to the higher level of the floor of a store-house, that he may be able to roll in a heavy cask, he employs the principle of the *inclined plane;* and the more gradual the inclination of the plank, the more easily will he effect his purpose: that is, the advantage gained by the inclined plane is greater the more the length of the plane exceeds its height.

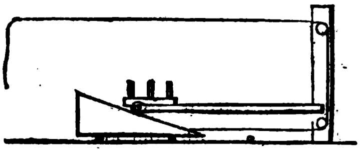
A road which is not level is an inclined plane When a road mounts over a hill, instead of winding round its foot, a team of horses with a load of a tun weight must exert strength sufficient to lift the load perpendicularly into the air, to a height equal to that of the top of the hill, instead of that moderate exertion which is necessary to overcome the friction of the axis of the wagon and the slight inequalities of a level road. Hence the absurdity of constructing roads in hilly countries to pass directly over the tops of hills, instead of winding by small circuits along their base. A body descending freely on an inclined plane moves with a velocity as much less than that with which it falls freely as the height of the plane is less than the length. If the elevation were one sixteenth of the length, the body would roll down one foot in the first second, and four in twice that time. It is on this principle that the equality in the vibrations of a pendulum may be explained. A long vibration takes no more time than a short one, because the body begins to fall in this case down a steep plane, and acquires great velocity. In a short vibration, the beginning of its path is a very gradual descent. A short pendulum vibrates more rapidly than a long one, because it has a shorter distance to move in a path of the same steepness. A body moving down an inclined plane moves four times as far in two seconds as in one A pendulum, to vibrate once in two seconds, must be therefore four times as long as one which beats seconds. The most remarkable application of the inclined plane is in the construction of the *marine railway*, on which, by the power of a few horses, a ship of six hundred tuns is drawn, with all its cargo, out of the water, high enough to allow workmen to pass under its keel.

The inclined plane is one of the three mechanical powers, or simple machines, formed, as its name imports, by a plane surface, supposed to be perfectly hard and inflexible, and which is always inclined obliquely to the weight or resistance to be overcome. The wedge is a modification of this machine, being formed of two inclined planes placed base to base. The screw is another modification, being, in fact, merely an inclined plane wound round a cylinder. This machine enables us to raise a given weight along the inclined surface to a given elevation, with less expense of force than would be required to raise it perpendicularly to the same elevation. The perpendicular height is called the *elevation of the plane*, and the two lines enclosing the angle which it subtends are called the *base* and the *length* of the plane.

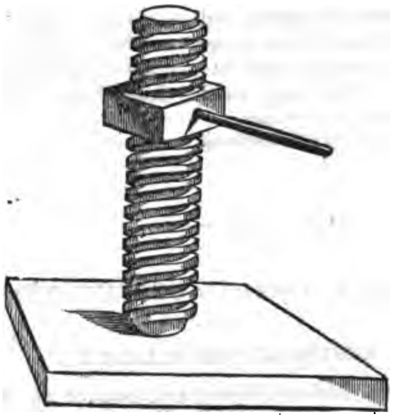


There are two modes of exhibiting the power of the inclined plane. The arrangement exhibited above consists of three paths, inclined to the plane of the horizon at different angles. To carry a loaded carriage up the first would require a weight of one pound, the second two pounds, and the steepest plane three pounds. If the inclined path be three times the length of the perpendicular lift, it will require only one third the weight to raise the carriage, but then it will require three times as long to accomplish the work.

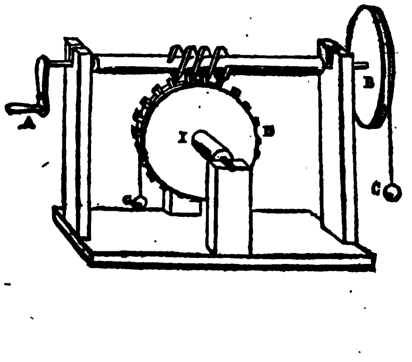
In the second arrangement of the inclined plane, the mechanical advantage is precisely the same, but the plane itself is put in motion. This is in reality the operating power in a common screw.



The *Screw.* Imagine an inclined plane to pass round an immense building like the tower of Babel, affording means of ascending to the top, and you have the first idea of the *screw.* It is an inclined plane wrapped spirally round a solid cylinder. The advantage gained by it depends on the slowness of the ascent, that is, on the number of turns, or *threads* as they are called, in a given distance. It is always used in combination with a lever. It is a machine of great power, commonly employed to produce compression or to raise heavy weights. In the screw beneath, the threads which form the path of the inclined plane are flat, instead of being sharp as in the common wood screw, and this form is well fitted for heavy work, as it materially reduces the friction.



A machine is sometimes constructed so as to show the precise power of a screw when combined with a wheel and axis, or lever, as in the cut below.

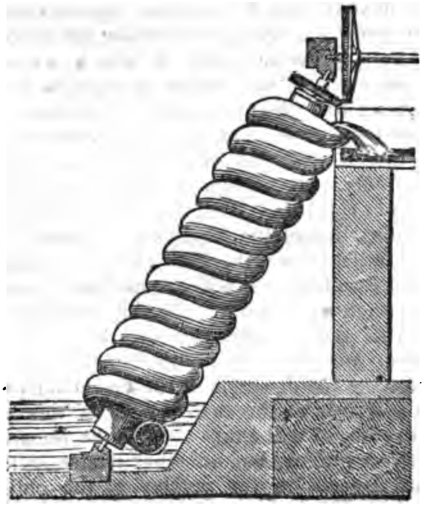


The screw with its handle A, and grooved pulley B, works in the teeth of the wheel D. Now if we suppose forty-eight teeth in the wheel, it must be obvious that, for every time the pulley B and the screw are turned round by the winch A, the wheel D will be moved one tooth by the screw; and therefore, in forty-eight revolutions of the winch, the wheel D will be turned once round. Then, if the circumference of a circle, described by the handle of the winch A, be equal to the circumference of a groove round the pulley B, the velocity of the handle will be forty-eight times as great as the velocity of any given point in the groove. Consequently, if a line G goes round the groove, and has a weight of forty-eight pounds hung to it, a power equal to one pound at the handle will balance and support the weight. To prove this by experiment, let the circumferences of the grooves of the wheels B and D be equal to one another; and then, if a weight of one pound be suspended by a line going round the groove of the wheel, it will balance a weight of forty-eight pounds hanging by the line G; and a small addition to the weight C will cause it to descend, and so raise up the other weight.

If a line G, instead of going round the groove of the wheel D, goes round its axle I, the power of the machine will be as much increased as the circumference of the groove exceeds the circumference of the axis: supposing it to be six times, then one pound at C will balance six times forty-eight, or two hundred and eighty-eight pounds hung to the line on the axis: and hence the power or advantage of this machine will be as two hundred and eighty-eight to one. That is to say, a man, who by his natural strength could lift a hundred weight, will be able to raise two hundred and eighty-eight hundred weight by this engine. If a system of pulleys were applied to the cord C, the power would be increased to an amazing degree.

When a screw acts in a wheel in this manner, it is called an *endless screw.*

The *Archimedean screw* is a machine for raising water, which consists either of a pipe wound spirally round a cylinder, or of one or more spiral excavations formed by means of spiral projections, from an internal cylinder, covered by an external coating, so as to be water-tight. The arrangement of the apparatus may be thus familiarly illustrated. If we conceive a flexible tube to be rolled regularly about a cylinder from one end to the other, the tube or canal will be a screw or spiral, in which we suppose the intervals of the spires or threads to be equal. The cylinder being placed with its axis in a vertical position, if we put in at the upper end of the spiral tube a small ball of heavy matter, which may move freely, it is certain that it will follow all the turnings of the screw from the top to the bottom of the cylinder, descending always as it would have done had it fallen in a right line along the axis of the cylinder, except that it will occupy more time in running through the spiral. If the cylinder be placed with its axis horizontally, and we again put the ball into one opening of the canal, it will descend, following the direction of the first demispire; but, when it arrives at the lowest point of this portion of the tube, it will stop. It must be remarked that, though its gravity has no other tendency than to make its descent in the demispire, the oblique position of the tube, with respect to the horizon, is the cause that the ball, by always descending, is always advancing from the extremity of the cylinder whence it commenced its motions to the other extremity. It is impossible that the ball can ever advance more toward the further, or, as we shall call it, the second extremity of the cylinder, if the cylinder, placed horizontally, remain always immoveable; but if, when the ball has arrived at the bottom of the first demispire, we cause the cylinder to turn on its axis without changing the position of that axis, and in such a manner that the lowest part of the demispire on which the ball presses becomes elevated, then the ball falls necessarily from that point upon that which succeeds, and which then becomes lowest; and, since this second point is more advanced toward the second extremity of the cylinder than the former was, the ball will, by this new descent, be advanced toward that extremity, and so on throughout, in such a manner that it will at length arrive at the second extremity by always descending, the cylinder having its rotatory motion continued. Moreover, the ball, by constantly following its tendency to descend, has advanced through a right line eqnal to the axis of the cylinder, and this distance is horizontal, because the sides of the cylinder are placed horizontally. But if the cylinder had been placed obliquely to the horizon, and we suppose it to be turned on its axis always in the same direction, it is easy to see that if the first quarter of a spire actually descends the ball will move from the lower end of the spiral tube, and be carried solely by gravity to the lowest point of the first demispire, where, as in the preceding case, it will be abandoned by this point, as it is elevated by the rotation, and thrown by its gravity upon that which has taken its place: whence, as the succeeding point is further advanced toward the second extremity of the cylinder than that which the ball occupied just before, and is consequently more elevated, therefore the ball, while following its tendency to descend by its gravity, will be always more and more elevated by virtue of the rotation of the cylinder. It will thus, after a certain number of turns, be advanced from one extremity of the tube to the other, or through the whole length of the cylinder, but it will only be raised through the vertical height determined by the obliquity of the position of the cylinder.



Instead of the ball, let us now consider water as entering by the lower extremity of the spiral canal, when immersed in a reservoir, as is shown in the accompanying figure.

This water descends first in the canal solely by its gravity, but the cylinder being turned, the water moves on through the canal to occupy the lowest place, and thus, by the continual rotation, is made to advance further and further in the spiral, till at length it is raised to the upper extremity of the canal, where it is expelled.

There is, however, with reference to the computed effect of this machine, an important difference between the water, or any other fluid, and the ball; for the water, by reason of its fluidity, after having descended by its gravity to the lowest point of the demispire, rises up on the contrary side to the original level; on which account more than half one of the spires will soon be filled with the fluid. This is an important particular, which, although it need not be considered in a popular illustration, must be attended to in a more accurate exhibition of the theory of this engine. The very little application of this machine to the purposes it is calculated to answer, will not, however, justify our entering upon a more minute examination of its theory in this place; although we must observe that it seems entitled, in a practical point of view, to greater attention than it now commonly receives. The Germans have a similar machine, which they call the water-screw; it consists of a cylinder, with its spiral projections detached from the external cylinder or coating within which it revolves. It is evident that some loss must here be occasioned by the want of perfect contact between the screw and its cover; in general, at least one third of the water runs back, and the machine cannot be placed at a greater elevation than 30°; it is also very easily clogged bv accidental impurities of the water.

(To be continued in our next.)

POPULAR MEDICAL OBSERVATIONS.

HEREDITARY PECULIARITIES.

That the features, voice, and manner of parents are often transmitted to their children, is a familiar fact; though it has not received such an extension and variety of application as by its importance it is so well entitled to. For the present, our remarks will be on those hereditary peculiarities indicated by genius, infirmities of temper, and tendency to bodily ailments and disease.

We must here take care not to identify the possession of genius with its determinate and successful display. The same faculties which were allowed to remain dormant, or which were faintly exhibited in the parent, may, when transmitted to the child, and fostered by opportunity and education, with, perhaps, the additional incentives of self-love and firmness of purpose, shine out with all the lustre of successful talent. Taste in the father is expanded into genius in the son. The same intellectual powers and peculiarities being possessed by both, the difference will consist in the superiour vigour in the one over those of the other. We are also to remember, that whatever there is marked in the character of either mind or body, will be exhibited in the offspring, with modifications depending on the similarity or difference, in these particulars, between the father and mother. This last is an important consideration, when we desire to solve the problem of hereditary qualities.

Notwithstanding the deficiency in so many biographies, of details of the peculiar cast of mind, and tastes of the parents of the subject of the narrative, we have yet enough to illustrate the hereditariness of genius. Raphael's father was himself an artist. The mother of Vandyck was distinguished for painting flowers. The grandfather of the eccentrick Benvenuto Cellini was an architect; and his father versed both in architecture and drawing. Of Parmigiano's parents we know little—his father dying when he was very young; but both his uncles were painters, and became his preceptors in an art in some parts of which he rivalled Correggio himself. Vasari's father gave him instructions in drawing. Vanloo, commonly called the Chevalier Carlo, state painter under Louis XV., and an artist of deserved eminence, was the brother, son, grandson, and great-grandson of painters. Horace Vernet, who ranks among the foremost of the modern French school, is the son of Charles Vernet, (famous for his paintings of horses and farmyard scenes, in which these animals are the chief figures,) and grandson of the Joseph Vernet so celebrated for his marine views. The brother of this last, though a bookseller by trade, was fond of painting, which he sometimes practised; and his pictures have been mistaken for those of Joseph. Titian's two younger brothers, and son and nephew, and grandnephew were painters. The strong family resemblance of genius is well evidenced in the Caracci, of whom Louis and his three cousins, Augustin, Annibal, and Francis, were the distinguished heads of the Bolognese school of painting. Antonio, the son of Augustin, gave early promise of greatness in the same line, in which he was arrested by death. In the sister art of musick, similar instances of this inheritance and subsequent transmission of genius might be readily furnished. The father of the tender Mozart was a violinist of reputation; and the sister of this celebrated composer displayed as precocious a musical talent as himself. He left two sons, one of whom is a musick director at Lemberg. Beethoven was the son of a tenor singer. More than fifty musical composers have proceeded from the family of John Sebastian Bach a name so celebrated in musical literature.

Among the examples of inherited bodily infirmities and peculiarities of intellect and feeling in distinguished geniuses of later days, we shall content ourselves with citing Johnson, Burns, and Byron. The father of Dr. Johnson was, say Boswell, a man of large and robust body, and of a strong and active mind; yet, as in the most solid rocks, veins of unsound substance are often discovered, there was in him a mixture of that disease, the nature of which eludes the most minute inquiry, though the effects are well known to be a weariness of life, an unconcern about those things whi
greater part of mankind, and a gene
gloomy wretchedness. From him
the biographer, the son inherited, wi
qualities, "a vile melancholy," whic
own too strong expression of any dis
mind, "made him mad all his life, a
ber." Johnson's mother was a wo
guished understanding, of whom it w
erence to her probable elation at her
that although she knew his value, sh
good sense to be vain of him. The d
ula or king's evil, under which he su
life, so much as to have his countena
and to lose the sight of one of his e
ously referred to contagion from his
part of his inheritance and the dire
of his peculiar bodily frame. In h
that precocity of intellect and facilit
which are so commonly associated wi

Burns, who was constitutionally m
hypochondriack, derived also from h
bust but irritable structure and tempe
and mind. In features and genera
poet bore a greater resemblance t
From her he inherited that fondness
traditionary lore, which was the germ
quent poetical greatness.

Of Byron's inherited peculiarities
tor speak than in the language of
Mr. Moore. "In reviewing," says thi
curserily the ancestors, both near
Lord Byron, it cannot fail to be rema
kingly he combined in his own natu
best, and perhaps worst, qualities tha
through the various characters of his
the generosity, the love of enterprise,
edness of some of the better spirits of
the irregular passions, the eccentrici
recklessness of the world's opinion,
characterized others."

History furnishes us with no exam
inventive genius, or large general po
standing, who was born of imbecile
are safe in affirming, that they wh
most conspicuously on the great thea
been much indebted to inheritance fo
intellect which has given them the m
fellow-beings. Our reference need
ther than to him whose name is iden
most astonishing changes and revolut
Europe. "The father of Napoleon B
Sir Walter Scott, "is stated to hav
very handsome person, a talent for
a vivacity of intellect, which he tra
son." And again he remarks—"It w
dle of civil discord, fights, and s
Charles Bonaparte married Letitia R
the most beautiful young women of
possessed of a great deal of firmnes
She partook of the dangers of her h
the years of civil war, and is said to
nied him on horseback on some milit
or perhaps hasty flights, shortly befor
ered of the future Emperour."

Frequent intermarriages among t
a particular class, as nobility or royal
by a deterioration of mental and phys

the tendencies to particular diseases, which might, under different circumstances, have been rendered nugatory, now acquire a fearful force. In this way has been brought about the degeneracy and even idiocy of some of the noble and royal families of Spain and Portugal, from marrying nieces and other near relations. From a similar cause proceeded the visible feebleness of character of so many of the old French noblesse. They had become, to make use of the language of a distinguished medical writer of their own nation, rickety, consumptive, and insane. The revolution, he adds, brought forward another race with better hopes.

Among other examples is one of a noble family, four successive generations of which were affected with aneurism or morbid enlargement of the heart. Testimony equally strong, and to the same effect, is borne by the most experienced writers on insanity. Dr. Burrows states that hereditary predisposition to this disease could be distinctly ascertained in six sevenths of his patients. He asserts that the frequency of transmission is greater by a third on the part of the mother than of the father. We find then in this inheritance and family community of disease, reasons of a very imperative nature, distinct from moral and social considerations, why laws have been so generally promulgated, from Moses down to the present time, against persons within certain limits of consanguinity intermarrying. Love may be blind to laws which are firmly based on nature; and, while condemning, we must often pity its wanderings: but no such toleration ought to be extended to the union between members of the same family, brought about by heartless avarice or ambition, for the purpose of retaining wealth, or preserving a title: and the consequences of which are often the transmission, into another generation, of infirmities in an aggravated shape, which a more natural and honourable course might have entirely prevented or at least greatly mitigated.

Jour. of Health.

BIOGRAPHY.

Biographical Sketch of CADWALLADER COLDEN, Formerly Lieutenant-Governour of New York.

This truly eminent and worthy character, who united in himself the several qualities we are accustomed to admire in the physician, philanthropist, and philosopher, was the son of the Reverend Alexander Colden, of Dunse, in Scotland, and was born on the seventeenth day of February, 1688. After he had laid the foundation of a liberal education under the immediate inspection of his father, he went to the university of Edinburgh, where in 1705 he completed his course of collegiate studies. He now devoted his attention to medicine and mathematical science until the year 1708, when being allured by the fame of William Penn's colony, he came over to Pennsylvania about two years after, where he practised physick with no small share of reputation until 1715, when he returned to England. While he was in London, he was introduced to that eminent philosopher, Dr. Edmund Halley, who formed so favourable an opinion of a paper on animal secretion, written by Dr. Colden some years before, that he read it at the Royal society, the notice of which it greatly attracted. At this time he formed an acquaintance with some of the most distinguished literary and scientifick characters, with whom he ever after maintained a regular correspondence. From London he went to Scotland and married a young lady of a respectable Scotch family, by the name of Alice Christie, with whom he returned to America in 1716.

In 1718 he settled in the city of New York; but soon after relinquished the practice of physick and became a publick character: he held in succession the office of surveyor-general of the province, master in chancery, member of the council at the instance of Governour Burnet, and lieutenant-governour. Previously to his acceptance of this last station he obtained a patent for a tract of land by the name of Coldenham, near Newburgh, on the Hudson, at which place he retired about the year 1756, where he spent a great part of his life. Here he appears to have been occupied, (with occasional interruption on account of publick affairs connected with his station of lieutenant-governour,) in the pursuit of general knowledge, but particularly in botanical and mathematical studies, at the same time that he continued his correspondence with learned men in Europe and America.

In July 1760, upon the death of James De Lancy, Mr. Colden was appointed lieutenant-governour of New York, which commission he held until the time of his decease, the administration of the government repeatedly falling on him by the death or absence of several governours-in-chief. His political character, ardent in the cause of the king, was rendered very conspicuous by the firmness of his conduct during the violent commotions which preceded the revolution. His administration is also memorable, among other circumstances, for several charters of incorporation for useful and benevolent purposes. Among these may be stated the act of incorporation for the relief of distressed seamen, called the Marine Society; that of the Chamber of Commerce, which has lately been revived by John Pintard, and is now prominent among the most effective organizations for commercial purposes in the city of New York, and one for the relief of widows and children of clergymen. After the return of Governour Tryon in 1775 he was relieved from the care of government. He then retired to a seat on Long Island, where a recollection of his former studies and a few select friends ever welcomed by a social and hospitable disposition, cheered him in his last days. He died in the eighty-ninth year of his age, on the memorable 28th of September, 1776, a few hours before the city of New York was in flames, retaining his senses to the last, and expiring without a groan.

Dr. Colden began at an early period of his life to pay great attention to the vegetable productions of America, in which delightful study his daughter afterward became distinguished; and it has generally been asserted that this eminent female botanist received from Linnæus the high compliment of having a plant of the tetrandous class named Coldenia, in honour of her merits. The Linnæan correspondence, however, recently published by Sir James Edward Smith, removes all doubt on the subject; the genus was so denominated as a tribute due to Dr. Colden himself. For it deserves to be recollected that Dr. Colden was the first American expositor of the Linnæan system in the new world. This he taught on the banks of the Hudson almost immediately after its announcement by the illustrious Swede.* That Linnæus contemplated a like honour to the distinguished daughter of Colden, there is little doubt. His correspondent Peter Collinson, repeatedly referred in his letters to Miss Colden's botanical disquisitions. In a letter of May, 1756, he remarks: "I have lately heard from Dr. Colden. He is well: but what is marvellous, his daughter is perhaps the first lady that has so perfectly studied your system. She deserves to be celebrated:" and in another letter of April, 1757, Collinson again writes to Linnæus: "In the second volume of Edinburgh Essays, is published a botanick dissertation by Miss Colden: perhaps the only lady that makes profession of the Linnæan system, of which you may be proud." Other testimonials in behalf of the high botanical attainments of Dr. Colden and his daughter, are recorded in the same work.

Dr. Colden was attentive to the physical constitution of the country, in which as a physician, he had for some time held a conspicuous rank, and he has left a long course of diurnal observations on the thermometer, barometer, and winds. He wrote a history of the prevalent diseases of the climate, which appeared many years after his death in Hosack's and Francis's American Medical and Philosophical Register, Vol. I.; and if he was not the first to recommend the cooling regimen in the cure of fevers, he was certainly one of its earliest and warmest advocates; and opposed, with earnestness, the then prevalent mode of treatment in the small-pox.

In the year 1743, a fever which occasioned great mortality, prevailed in the city of New York, and created much alarm. From the slight evidence in Smith's New York and other sources, it seems to have been similar to the malignant pestilence which has occurred of latter years. Two hundred and seventeen persons died of a population of seven or eight thousand. He communicated his thoughts to the publick on the most probable method of treating the disease, in a small treatise on the occasion, enriched with much learning, in which he enlarged on the pernicious effects of marshy exhalations, moist air, damp cellars, filthy stores, and dirty streets: showed how much these nuisances prevailed in many parts of the city, and pointed out the remedies. The corporation of the city presented him their thanks and established a plan for draining and clearing the city, which was attended with the most salutary effects. This important paper may also be found in the Register just referred to, as well as his Observations on the Climate and Diseases of New York. An opinion of Dr. Colden, set forth in this last-named essay, that the climate of the city of New York, he doubts not, will in time become one of the most agreeable and healthy on the face of the earth, has created some animadversion. He published a short treatise on the cure of cancer, and another on the virtues of the "Great Water Dock;" this last production was the occasion of the commencement of his Linnæan correspondence; though in one of his letters to the great botanist, bearing date 1748–9, it seems evident he had already made himself favourably known to him by other studies in the classification of plants according to the method of the sexual system. In 1753, he published some observations on the epidemical sore throat which appeared in Massachusetts in 1735, and had spread over a great part of North America. These observations are to be seen in Carey's American Museum.

Upon his becoming acquainted with the Linnæan system of botany he applied himself with new delight to that study, as might be inferred from the progress he made in the science, but we have the further evidence of his zeal in that pursuit from one of his own letters to Linnæus: "When I came into this part of the world, near forty years since," says he, "I understood only the rudiments of botany, and I found so much difficulty in applying them to the many unknown plants I met with everywhere, that I was quite discouraged, and laid aside all attempts in that way near thirty years, till I casually met with your books, which gave me such new lights that I resolved again to try what could be done with *your* assistance." His slight personal interviews with Kalm, the traveller, and a pupil of Linnæus, may also have given him still further aid. He felt justified, however, in attempting a scientifick description of American plants, and published an account of between three and four hundred which was printed in the Acta Upsaliensia. Of this number about two hundred were for the first time noticed as new species. He published the "History of the Five Indian Nations," in two volumes, 12mo, and dedicated it to Gov. Burnet, who had distinguished himself by his wisdom and success in the management of Indian affairs. This history may be pronounced a work of great historical value, and indispensable to every writer on the important subject of our Indian tribes. Much of his knowledge was derived from actual observation and experience. But the subject which drew Dr. Colden, at one time of his life from every other pursuit, was what he first published under the title of the "Cause of Gravitation," but which being afterward much enlarged, was published in 1751, by Dodsley, of London, in one volume, 4to, entitled the "Principles of Action in Matter," to which is annexed a "Treatise on Fluxions." His friend Peter Collinson, in a letter to Linnæus, thus writes of the first edition in 1747. "The treatise on gravitation by our friend Dr. Colden, is a new system which he desires may be thoroughly examined. I wish it had been wrote in Latin, to have been more universally read. But as a great many of your learned men read English, I hope it will be acceptable to some of them." That this book cost him many years of severe study, is apparent from the nature of the subject and the extent of his researches. His desire to free it of all objections urged against it, caused him to prepare a new edition with further elucidations of particular parts, which he transmitted to Dr. Whytte, a professor in the university of Edinburgh: the fate of the volume was never known.

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* Dr. Francis's Discourse.

In the American Medical and Philosophical Register, a work which has already been referred to in this article, a paper of singular value may be found, entitled a "New Method of Printing discovered by Dr. Colden, together with an Original Letter from Dr. Franklin on the same subject." To this document is added by the editors some account of stereotyping, as now practised in Europe. From the correspondence with Colden and Franklin, the curious fact is deduced, that the stereotype process, said to have been invented by M. Herhan in Paris, and now practised by him (1810) in that city under letters patent of Napoleon, is precisely the same as that spoken of by Dr. Colden more than sixty years ago. How far this great improvement in the typographick art is an American invention, becomes from the testimony thus furnished, an enquiry well worth investigation. The claims of Dr. Colden to this high honour, seem to be of a no ordinary character.[*]

Though his principal attention after the year 1760, was necessarily directed from philosophical to political matters, yet he maintained with great punctuality his literary correspondence, particularly with Linnæus of Upsal, Gronovius of Leyden, Dr Porterfield and Whytte of Edinburgh, Dr. Fothergill and Mr. Collinson, F. R. S. of London. There were also several communications on mathematical and astronomical subjects between him and the Earl of Macclesfield. With most of the eminent men of America he held an almost uninterrupted correspondence. Among them may be mentioned the names of Dr. Garden, J. Bartram, Dr. Douglass, Dr. John Bard, Dr. Samuel Bard, James Alexander, Esq. and Dr. Franklin. With Dr. Franklin in particular, he was a constant and intimate correspondent, and they regularly communicated to each other their philosophical and physical discoveries, especially on electricity. In these letters are to be observed the first dawnings of many of those discoveries which Dr. Franklin has communicated to the world, and which so much astonished and enlightened mankind. In one of his letters Dr. Franklin gives an account of the organization of the American Philosophical Society, in which he mentions that Dr. Colden first suggested the idea and plan of that institution;[*] and in another letter addressed to Dr. Colden, he details the circumstances connected with his making with his own hands a cylindrical electrical machine, probably the first apparatus of such a construction ever formed.

That Dr. Colden was a man of varied and extensive learning, of deep research and extensive observation, is fully evinced by his various writings: that in industry he had few to equal him, and that his devotion to science arose from the impulse of a generous and disinterested feeling, will be conceded by all who reflect upon the nature and amount of his philosophical lucubrations, and the circumstances of the country and the times in which he lived.

The numerous manuscript papers left by Dr. Colden at the time of his death, are now in the possession of his great grandson, David C. Colden Esq., of New York, who has kindly permitted the Franklin correspondence to be delivered to Jared Sparks Esq., in order, more effectually to enable this enlightened and able editor to complete his ample edition of Dr. Franklin's life and works now publishing at Boston.

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[*] We purpose, in some future number of the Family Magazine, to give an historical account of this great discovery, when we shall examine with impartiality the pretensions set up for Dr. Colden, and the observations of Drs. Hosack and Francis, the editors of the Register, on the subject, as well as detail most faithfully the leading circumstances connected with the progress of this great improvement in the art preservative.

[†] This curious paper, the only existing document making known the origin of this society, may be seen in Hosack and Francis's American Medical and Philosophical Register already referred to in this article.

NATURAL HISTORY.

[The Stork.]

THE STORK.

Storks are regular birds of passage; but so punctual in their comings and goings, that from the most remote times, they have been considered as gifted with reasoning powers. The prophet Jeremiah, speaking of their knowledge, contrasts their instinctive obedience to their Creator's laws, with the culpable departure therefrom by those on whom God had bestowed the higher gifts of reason and understanding. "Yea, the stork in the heaven knoweth her appointed times; and the turtle, and the crane, and the swallow, observe the time of their coming; but my people know not the judgement of the Lord."—Jer. viii. 7.

So punctual is the arrival and departure of the various migratory birds, that, to this day, the Persians, as well as ancient Arabs, often form their almanacks on their movements. Thus, the beginning of the singing of nightingales was the commencement of a festival, welcoming the return of warm weather; while the coming of the storks was the period of another, announcing their joy at the departure of winter. The expression, "the stork in the heaven," is more applicable than at first appears, for even when out of sight, its pathway may be traced by the loud and piercing cries, peculiar to those of the new as well as of the old world. In
ica, too, its migrations are equally regular, pa
its immense periodical journeys at such a prod
height as to be seldom observed. It is satisf
thus to strengthen the authority of a Scriptura
sage from so distant a source, though amply
out by witnesses in the very country in whi
prophet dwelt.

"In the middle of April," says a traveller
Holy land, "while our ship was riding at
under Mount Carmel, we saw three flights o
birds, each of which took up more than thre
in passing us, extending itself, at the sam
more than half a mile in breadth." The
then leaving Egypt, and steering for Palest
wards the northeast, where it seems, from
count of another eyewitness, they abound
month of May. "Returning from Cana to
reth," he observes, "I saw the fields so fill
flocks of storks, that they appeared quite wh
them; and when they rose and hovered in
they seemed like clouds. The respect pai
mer times to these birds is still shown;
Turks, notwithstanding their recklessness
ding human blood, have a more than ordinar
for storks, looking upon them with an alm
rential affection."

In the neighbourhood of Smyrna, and indeed throughout the whole of the Ottoman dominions, wherever the bird abides during its summer visits, it is welcomed. They call him their friend and their brother, the friend and brother exclusively of the Moslem race, entertaining a belief that wherever the influence of their religion prevailed, it would still bear them company; and it might seem that these sagacious birds are well aware of this predilection: for singularly enough, a recent traveller, who met with them in incredible numbers in Asia Minor, observed, that although they built on the mosques, minarets, and Turkish houses, their nests were never erected on a Christian roof. In the Turkish quarters they were met in all directions, strutting about most familiarly, mixing with the people in the streets, but rarely entering the parts of the town inhabited by the Greeks or Armenians, by whom, possibly, they may be occasionally disturbed. Nothing can be more interesting than the view of an assemblage of their nests. Divided as they always are into pairs, sometimes only the long elastick neck of one of them is to be seen peering from its cradle of nestlings, the mate standing by on one of his long slim legs, and watching with every sign of the closest affection. While other couples, on the adjacent walls, are fondly entwining their pliant necks, and mixing their long bills, the one sometimes bending her neck over her back, and burying her bill in the soft plumage, while her companion clacking his long beak with a peculiar sharp and monotonous sound, raises her head and embraces it with a quivering delight; while from the holes and crannies of the walls, below the storks' nests, thousands of little blue turtledoves flit in all directions, keeping up an incessant cooing by day and night.

At another Mohammedan town, Fez, on the coast of Barbary, there is a rich hospital, expressly built, and supported by large funds, for the sole purpose of assisting and nursing sick cranes and storks, and of burying them when dead! This respect arises from a strange belief, handed down from time immemorial, that the storks are human beings in that form, men from some distant islands, who, at certain seasons of the year, assume the shape of these birds, that they may visit Barbary, and return at a fixed time to their own country, where they resume the human form. It has been conjectured that this tradition came originally from Egypt. By the Jews the stork was also respected, though for a different reason; they called it Chaseda—which in Hebrew, signifies piety or mercy—from the tenderness shown by the young to the older birds, who, when the latter were feeble or sick, would bring them food.

This affection, however, appears to be mutual, for the parent birds have a more than common degree of affection for their young, and have been known to perish rather than desert them. An attachment of this sort once occasioned the death of an old stork, at the burning of the city of Delft, in Holland. When the flames approached her nest, situated on a housetop, she exerted herself to the utmost to save her young; but finding every effort useless, she remained and perished with them. Besides the Jews, other ancient nations held these birds in veneration. A law among the Greeks, obliging children to support their parents, even received its name from a reference to these birds. By the Romans it was called the pious bird, and was also an emblem on the medals of such Roman princes as merited the title of *Pius*.

THE FROG.

The frog (*Rana*,) is a genus of *Batrachian* reptiles, the typical genus, and the one from which the name is taken, *Batrachos* being the Greek name for a frog. In the Linnæan system, the genus *Rana* included not only the frogs properly so called, but the *tree-frogs* (*Hyla*,) and the *toads* (*Bufo*;) and Cuvier, as he has done in many other instances, has retained the Linnæan arrangement for the whole genus, or rather family, but has divided it into three sub-genera, answering to those which we have mentioned.

The general characters of frogs are:—The body thick, and a little compressed, elongated, moist on the surface, covered on the upper part with a few small tubercles, and generally granulated on the under surface, with the exception of that of the thorax which is smooth. On each side of the back, just above the loins, some of the species have an angular fold. The fore feet have four separate toes, or toes without any webs, the thumb being larger than the others, and in the males undergoing a peculiar enlargement at the pairing-time. The hind feet are much longer, not much less than the length of the body; and they are five-toed and palmated in all the species. The upper jaw is furnished with a single row of small and finely-pointed teeth, and there is also a row of similar teeth across the palate. The tongue is short, thick, and fleshy, adhering to the sides of the under jaw, but capable of being elevated against the palate, so as completely to close the communication with the nostrils. It will be perceived that this structure of mouth is a simple swallowing one; and that a frog can neither bite nor masticate. This points immediately to the kind of food on which it must subsist, namely, food which it can take into the stomach without any preparation; and in the taking of this food, frogs are of considerable service to man on the land, nd not altogether useless in the water. The different species of slugs, which are so very destructive in gardens, and to many culinary and other useful plants, form one principal article of the food of frogs; and, therefore, frogs are deserving of much encouragement, in consequence of the value of their labours; and, while their labours are thus valuable, they themselves harm nothing. They do not burrow in the earth, neither do they eat any vegetable substance so far as is known; and, therefore, while they tend to preserve vegetation in the moist places of the garden, and indeed in all places of it on those damp and dewy nights in which slugs are so mischievous, they are always worth protecting; and not only so, but it is worth while to keep a little pond for their aquatick amusements, nor, perhaps, is it altogether amiss to have a bit of stagnant water in some waste place in which they may breed; for, though the nuptial songs of the frogs are not the most melodious in the world, there is an association of cheerfulness with their croaking—their song, such as it is, is a song of hope; it tells us that the season of growth and beauty is coming, and in the case of the common frog, it tells this very early in the season.

There is another reason why some attention should be paid to frogs, and that is their value as an article of food. Both the common frog and the green frog, which is specially called the esculent one, are fit for this purpose; and, though there is a prejudice against them in Britain, it is an exceedingly ill-grounded and foolish one. It is even worse than this, because it is a remnant of that ancient political animosity which existed so long between England and France; and which, unfortunately for both nations, kept the nearest and most powerful neighbours, whose best interest it was to be at peace, as they could mutually serve each other at the least expense, in a state of constant war, or, at all events, in a panick of mind always prepared for battle. This part of the prejudice is nearly exploded; and it would be just as well to explode the other part; and as we do not now hate Frenchmen, so neither should we loathe frogs. The hind legs and thighs of the frogs are the only parts which are eaten; because they are the only parts which contain much muscle; and this muscle is firm, white, well flavoured, and exceedingly nourishing. This is, in fact, the case with the muscle of all esculent reptiles, and it arises from the quantity of gelatine, of a very pure description, which exists in all the parts of them.

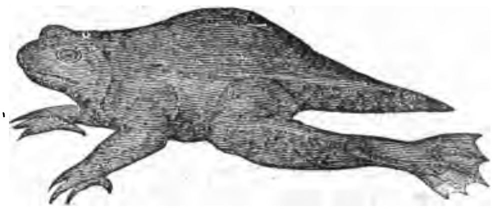
Frogs have no trace of ribs in their skeletons; the sternum is formed at the under part of a cartilaginous appendage, and it terminates in a disk under the larynx which is united to the clavicles, while a disk at the other extremity, immediately in front of the belly, is attached to the abdominal muscles only. The bones of the scull are of a prismatick shape, flattened above, and enlarged posteriorly; all the bones of the scull and face are soldered into one piece. The head is articulated by two condyles to the sternum, so that the head has very little motion on the neck. The sacrum is long, pointed, and compressed, but there is no os coccygis, nor any production bearing the least resemblance to a tail. This is the more curious, because the young of all the species of frogs have tails as their only organs of motion; and one species—the Surinam frog—has this organ so large in proportion to that part which is afterward to be developed into the perfect frog, that the young was long considered as a kind of fish.

About the year 1816, Mr. W. M. Ireland studied the Surinam frog through its change from the rudimental tadpole to the perfect reptile; and the following is the substance of his communication, which was published in Brande's Journal for 1816:—When first seen by Mr. Ireland, the tadpole was about four inches and a half long, by about an inch broad; had a large head and small mouth, very much resembling those of a fish, though the rudiments of of two legs were evident just behind the head. In about a fortnight the length of the animal had increased to eight inches, and its breadth to about two and a half; and the rudiments of the legs were developed into nearly perfect members, with five-clawed toes, united by a membrane, evidently the future hind legs of the animal.

On examining its internal structure during this fortnight, the intestinal canal appeared very long and coiled up, and the rudiments of the lungs were seen in the posterior part of the belly.

In about three weeks the fore legs made their appearance, the head and mouth assumed their ordinary figure, the former being considerably smaller and the latter larger than before; and the animal which till now had lain at the bottom of the vesse in a torpid state, became more active and lively, an usually remained suspended in the water, with it mouth above the surface. By this time the intestinal canal was wonderfully altered in extent and appearance, being contracted apparently to less tha half its length, and having but very few short convolutions, and nearly the whole of the cavity of th belly was filled with fat.

Tadpole of the Surinam Frog, a quarter its length.



Surinam Frog, nearly full grown, one half of real length.

In about six weeks the animal was greatly contracted in size, being little more than three inche long by about an inch in breadth, and had becom a perfect frog, except some small remains of th tail, which had been gradually sloughing off or absorbed, and the disappearance of which had s greatly contracted the animal's length.

Frogs are exceedingly numerous; and in thei productive powers they are more prolifick than an other vertebrated animals, with the exception of fishes. Three or four hundred is a very ordinary year' produce from a single pair; and the number is ofte as many as a thousand. This extraordinary powe of multiplication cannot, upon the general principl of the system of nature, have been given withou corresponding uses. In the case of frogs, thos uses are twofold, extending both to what they ea and what eats them. We have already attended t the first of these, in so far as man is concerned, an also taken some slight notice of the second to th same extent.

This is not, however, the proper view to take c the system of nature, if we are to understand the system aright. We are not to suppose that creatio is imperfect until man puts his hand to it; for, thoug it has a capacity to be turned to his use to as grea an extent as he can possibly stretch his knowledge yet the system is in itself perfect without him; an wild nature goes on without the smallest embarrassment or difficulty in those places which have neve been trodden by a human foot. We must, therefore seek for those uses to which the past productivenes of the frog applies, without any particular referenc to man and his operations.

Now the number of small molluscous animal which the frogs consume, and of which the productive powers are also very great, and also the number of larvæ and other minute beings of the water which they remove both in their tadpole and their mature state, would be productive of unseemly mischief were it not for the frogs. On the other hand, the frogs themselves supply food for a vast number of other creatures. Birds and fishes eat the eggs while they are in the waters, at that season when there is hardly any other supply. The tadpoles have many enemies; and the full-grown frogs contribute largely to the supply of fishes, of more powerful reptiles, and of many species of those birds which live on the banks of the rivers. The eggs and tadpoles of frogs are also subject to various casualties from the seasons. They are often frozen, at least the eggs are; but whether this destroys the principle of life in them, is not so clearly ascertained. A frog itself can be brought to as low a temperature nearly as that of freezing, without being destroyed; but in the experiments which have been made, we believe that actual freezing has been in all cases fatal. A more certain means of destruction is drought; for, as both humidity and atmospherick action are necessary to the quickening of the eggs, they of course perish if the water in which they have been deposited dries up. So also if the little pools and runs of water into which the tadpoles distribute themselves are dried up, they, as breathers through water, must perish. We need not add that, for the keeping down of the excess of that on which they feed, for the supply of those animals which feed on them, and for compensating for those chances of destruction, their great fertility is required.

We need not describe the appearance of the eggs or spawn of frogs, as it is familiar to every one who walks in the fields in the spring months. It is, however, worth while shortly to advert to the transformation which these animals undergo. When they come out of the egg, they consist of an oval head, having a small mouth with a sort of horny mandibles, and an elongated tail, which bears some resemblance in shape to the posterior part of a fish, and has its principal motions lateral, as is the case with fishes. In this state they breathe by means of gills, not very unlike those of fishes, as they consist of little tufts of fibres fixed to the edges of small cartilaginous arches, and the water passes through the fibres much in the same manner as it does through those of fishes. In this stage of their existence, the cavity of the body extends some way into the tail; and the animal really bears some sort of resemblance to a compound of a reptile and fish. It was a long time before the real state of the case was generally known; and hence the ridiculous stories of the spontaneous generation of frogs, and of showers of them falling from the sky, of which we read in the older authors. But any one who chooses to observe water in which there are tadpoles, and they are so abundant that there are few stagnant pools without them, may see the progress of the transformation. The hind feet are the first to be developed; and they are produced not from the tail, which contains no part of the perfect frog, but from the posterior part of the head, which head in the tadpole state is both head and body as respects the mature frog. After their first appearance these hind feet grow apace, and during their growth the tail hardly diminishes; but by the time that the feet can act in swimming, it will be found that the tail has changed both its external action and its internal structure. It has become thicker laterally, its finlike margin has disappeared, and it does not act on the water with that lively motion which it had in the finless tadpole. Internally it has lost its muscular texture, and become a reservoir of a sort of fatty substance, which by some process that we do not very well understand, furnishes the animal with food during the last stage of its transformation, that is of the final development of the fore feet, the shortening and change of the intestines, the development of the lungs, and the absorption of the gills; during which changes, at least in the very last stages of them, the animal can of course neither breathe nor feed in the water. Thus this curious accumulation of nourishment in the tail bears some slight resemblance to that which is provided for the chicken in the egg; and the moment that the change is completed, the tail is absorbed, the gills are gone, the lungs perfected, and the former tadpole no longer capable of breathing in that element in which it has hitherto lived, leaps out of the water a little frog. The numbers of them that leave the ponds or streams on such occasions are very great, so many as that in particular cases four or five acres of ground have been observed entirely covered with them. Those migrating myriads are very frequently thinned by birds, or where serpents abound, by those species which frequent moist places, and the banks of rivers. It is probable that those migrations may have given rise to the old stories of showers of frogs; because, whether young or old, frogs are always most active when the air is humid.

After their transformation, they are no longer capable of breathing through the medium of water; and there is a change in the way in which they receive the air. While tadpoles they take in the water and air along with it, by the mouth; but when they acquire their perfect form, they do not use the mouth in breathing, at least in the process of inspiring or taking in air. They do this through the nostrils; and after the cavity of the mouth is filled, they elevate the tongue first, to close the nostrils, and then gradually to occupy the cavity, by which means the air is forced into the cells of the lungs, and when it has performed its office, then it is expelled, not by the action of a diaphragm, but by the simple contraction of the abdominal muscles. This is a slow process; but the system does not require very powerful action; and, when they are sporting in the water, it can be suspended for a limited time.

Frogs in their proper state cannot be considered as inhabitants of the water, though they all resort there more or less, but with different degrees of frequency in the different species. Still they are not found in very dry situations, but in marshy and boggy places, and on the margins of lakes and rivers. They resort to the water for food, which principally consists of aquatick insects, worms, and the very young fry of fishes; they also resort there for the purpose of breeding, and, as it is seen from their gambols in the water, they sometimes resort there for mere amusement.

The dotted frog, shown in the annexed engraving, is ash-coloured on the upper part with small green dots. The feet are marked by transverse bands, and the toes of the hind feet are webbed for only part of

their length. It has been observed in the neighbourhood of Paris, and in some other parts of France, but it is as rare there, and its manners are as little known, as the natter-jack in England. The species which have been seen are very small, not exceeding one inch in length; but whether it attains a larger size than this is not known.

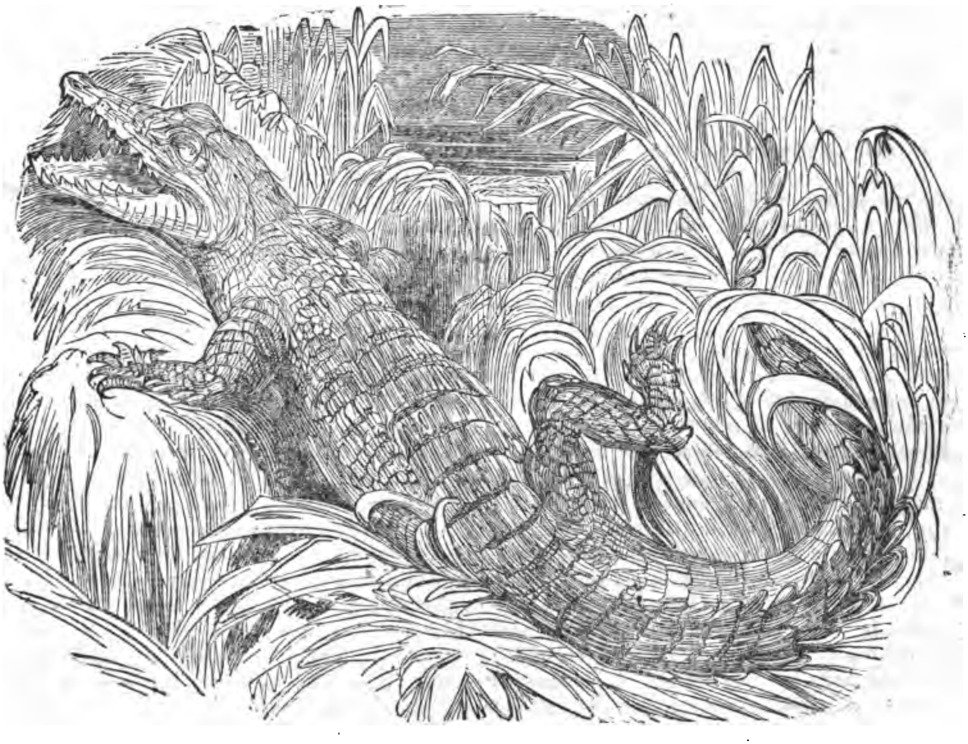
THE CROCODILE.

"The crocodile, is a genus of saurian reptiles, forming, along with the alligator and the gavial, a well marked and very distinct family, the largest, most powerful, and the only ones which are in any way dangerous to the human race.

The characters of the whole family are: size very large; tail flattened on the sides; fore feet with five toes, hind with four, of which the outer one is without any claw; all the feet are more or less webbed; a single row of teeth in each jaw; the tongue fleshy, flat, and so much attached to the sides of the under jaw, that the ancients supposed it to be wanting; the back and tail covered with large and strong scales of a square form, ridged at the middle; and a crenated scaly crest along the tail, forming a double row at the basal part; the scales on the under part are square, but small, smooth, and without any keel.

The mouth of these reptiles is a very formidable instrument, although it does not answer all the descriptions that have been given of it. The lower jaw extends farther back than the upper, so that there is room for the insertion of very powerful muscles, both for opening and for closing this jaw, the motions of which are as extensive as they are powerful. It is not true, however, that these animals have a motion in both jaws, as was believed by the ancients, and is still asserted in some of the works on natural history; and it is easy to see that such a motion would do them harm rather than good.

There are some of the serpents which can not



[The Crocodile.]

only turn both jaws till they are in the same plane, but distend the opening considerably beyond the mere measure of the two jaws, when they have occasion to swallow large prey. But the mouths of these serpents do not form an analogy for the mouths of the crocodile family. In serpents, the mouth is generally only a swallowing apparatus, and those which capture large prey are either poisoning serpents, which kill by the fangs, or crushing serpents, which kill by the folds. The crocodiles, on the other hand, are biting animals, which kill with the mouth; and such animals would have little or no power if they had a motion in both jaws. The action of muscle against muscle in an animal, would be the least profitable way in which it could exert its strength, as the effect would be only equal to the difference of the exertions after the stronger muscle had forced the weaker one to a state of rest; and thus, the animal would lose an effort equal to double that made by the weaker muscle. There are no such mechanical bungles as this in nature; and it is a good rule in judging of the truth of what is alleged of any animal, to consider whether that which is alleged is consistent with the utmost perfection of mechanical skill—the producing of the greatest effect by the least exertion; and if this is not the case, we may rest assured that that which is alleged is not true.

The nostrils of the crocodile are formed externally of two slits which cross each other, the angular pieces between serving as little valves to close the aperture when necessary; they lead by a long canal through the palatal and sphenoid bones to an opening in the back part of the mouth; the ear closes externally by means of two fleshy lips, which close it like valves; the eyes have a third eyelid; and there are under the throat two small holes, which lead to glands secreting an unctuous matter which smells very strongly of musk. So abundant is the quantity of this matter, and so powerful its scent, that in warm countries, where crocodiles are abundant, they perfume the whole country around the rivers.

The vertebræ in the neck of the crocodiles are furnished with a sort of false ribs on the sides, which hinder flexure in that direction, and thus the animal cannot turn its head very readily aside, or even turn its body for animals which have the neck stiff always have difficulty in turning laterally. But the crocodile can turn the neck very readily, so as to elevate the head till the line of it forms less than a right angle with that of the body; and it can also move the head very rapidly from this elevated position to one rather lower than the horizontal line.

These motions of the neck answer better with the habits of the animal than if they had been in the other direction; for the crocodiles do not pursue their food either along the banks of the rivers or in the water. They are liers in wait, as is the case with all large and heavy animals of predatory disposition, unless it be those species which have the wide sea for their field of chase. The crocodile is a powerful animal even upon land; but its chief scene of action is in the water, where it watches by the places to which land animals come to drink, with only the point of the nose above the surface; and as, at these times, it is perfectly still, other creatures approach near it without being aware of their danger. When the animal comes sufficiently near, the mouth of the crocodile opens rapidly to a great extent by the bending backward of the head and upper jaw upon the joints of the neck as a centre of motion, and the moving of the under jaw in the other direction upon its own articulation. Thus, in the opening of the mouth, there is a motion of both jaws from each other; and when they are again closed, the upper jaw does descend to meet the lower one; but the motion of the upper is not against that of the lower, as they are not articulated on the same centre or the same bone. Hence the peculiar motion increases the force of the bite instead of diminishing it; as the bite is given with both jaws, which when they come to a state of rest, the upper offers a point of solid resistance to the under."

LITERARY CHARACTER OF SIR WALTER SCOTT.

From the Edinburgh Review.

"Perhaps no writer has ever enjoyed in his lifetime so extensive a popularity as the Author of Waverley. His reputation may be truly said to be not only British, but European—and even this is too limited a term. He has had the advantage of writing in a language used in different hemispheres by highly civilized communities, and widely diffused over the globe; and he has written at a period when communication was facilitated by peace. While the wonder of his own countrymen, he has, to an unexampled degree established an ascendancy over the tastes of foreign nations. His works have been sought by foreigners with an avidity equalling, nay, almost exceeding, that with which they have been received among us. The conflicting literary tastes of France and Germany, which, twenty years ago, seemed diametrically opposed, and hopelessly irreconcilable, have at length united in admiration of him. In France he has effected a revolution in taste, and given victory to the 'Romantic school.' He has had not only readers, but imitators. Among Frenchmen, the author of 'Cinq Mars' may be cited as a tolerably successful one. Italy, in which what *we* call 'Novels' were previously unknown, has been roused from its torpor, and has found a worthy imitator of British talent in the author of 'Promessi Sposi.' Of the Waverly Novels, six editions have been published in Paris, (1832.) Many of them have been translated into French, German, Italian, and other languages.

"In 1813, before the appearance of Waverley, if any one should have ventured to predict that a writer would arise, who, when every conceivable form of composition seemed not only to have been tried, but exhausted, should be the creator of one hitherto unknown, and which, in its immediate popularity, should exceed all others—who, when we fancied we had drained to its last drop the cup of intellectual excitement, should open a spring, not only new and untasted, but apparently deep and inexhaustible—that he should exhibit his marvels in a form of composition, the least respected in the whole circle of literature, and raise the Novel to a place among the highest productions of human intellect—his prediction would have been received, not only with incredulity, but with ridicule; and the improbability would have been heightened, had it been added, that all this would be effected with no aid from the influence of established reputation, but by a writer who concealed his name. The productions of the Author of Waverley are virtually novelties in our literature. They form a new species. They were, it is true, called Historical Novels; and works bearing that appellation had existed before. But these were essentially different: they were not historical in the same sense; and were as little to be classed with the Waverley Novels, as is a chronological index or a book of memoirs, because the same names and circumstances may be alluded to in each. The misnamed historical novels which we possessed before Waverley, merely availed themselves of historical names and incidents, and gave to the agents of their story the manners and sentiments either of the present period, or, much more commonly, of none.

"One of the points of view in which the Author of Waverley is first presented to us is, as a delineator of human character. When we regard him in this light, we are struck at once by the fertility of his invention, and the force, novelty, and fidelity of his pictures. He brings to our minds, not abstract beings, but breathing, acting, speaking individuals. Then what variety! What originality! What numbers! What a gallery has he set before us! No writer but Shakspeare ever equalled him in this respect. Others may have equalled, perhaps surpassed him, in the elaborate finishing of some single portrait, (witness the immortal Knight and Squire of Cervantes, Fielding's Adams, and Goldsmith's Vicar;) or may have displayed, with greater skill, the morbid anatomy of human feeling—and our slighter foibles and finer sensibilities have been more exquisitely touched by female hands—but none, save Shakspeare has ever contributed so largely, so valuably, to our collection of characters;—of pictures so surprisingly original, yet, once seen, admitted immediately to be conformable to Nature. Nay, even his anomalous beings are felt to be generally reconcilable with our code of probabilities; and, as has been said of the supernatural creations of Shakspeare, we are impressed with the belief, that if such beings did exist, they would be as he has represented them.

"The descriptions of persons by the author of Waverley are distinguished chiefly by their picturesqueness. We always seem to behold the individual described. Dress, manners, features, and bearing, are so vividly set before us, that the mental illusion is rendered as complete as words can make it. But if we feel thus familiar with the personage introduced, it is rather because the mind's eye has received his image, than because we are endowed with a knowledge of his character. It is the outward, not the inward man, that most engages our attention. We comprehend Iago perfectly, without knowing what manner of man he was to look upon. But Varney, Rashleigh, or Christian, must be presented mentally to the eye, as well as to the understanding, before we can feel an equal intimacy. The method of Sir Walter Scott has the merit of individualizing an imaginary person in a remarkable degree, and is well suited to the nature of the Novel. It effects much of what, in the drama, is supplied by the actor who represents a character on the stage. But it is an inferiour art to that of unveiling the recesses of the mind, and presenting to us thoughts, passions, tastes, and springs of action—causing us, in fact, to perceive and know the person, not merely as if he stood before us, but as if he had long been our intimate acquaintance. The best drawn characters of the Author of Waverley make us feel as if we saw and heard them; those of Shakspeare as if we had lived with them, and they had opened their hearts to us in confidence.

"That the Author of Waverley is a master of the pathetick, is evinced by several well known passages. Such are the funeral of the fisherman's son in the 'Antiquary,'—the imprisonment and trial of Effie Deans, and the demeanour of the sister and the broken-hearted father,—the short narrative of the smuggler in 'Redgauntlet,'—many parts of 'Kenilworth,'—and of that finest of tragick tales, the 'Bride of Lammermoor.' We must pause to notice the last. In this, above other modern productions, we see imbodied the dark spirit of fatalism,—that spirit which breathed in the writings of the Greek tragedians, when they traced the persecuting vengeance of Destiny against the houses of Laius and of Atreus. Their mantle was, for a while, worn unconsciously by him who showed to us Macbeth: and, here again, in the deepening gloom of this tragick tale, we feel the oppressive influence of this invisible power. From the time we hear the prophetick rhymes, the spell has begun its work, and the clouds of misfortune blacken around us; and the fated course of events moves solemnly onward, irresistible and unerring as the progress of the sun, and soon to end in a night of horrour. We remember no other tale in which not doubt, but certainty, forms the groundwork of our interest.

"The plots in the Waverley Novels generally display much ingenuity, and are interestingly involved; but there is not one in the conduct of which it would not be easy to point out a blemish. None have that completeness which constitutes one of the chief merits of Fielding's Tom Jones. There is always either an improbability, or a forced expedient, or an incongruous incident, or an unpleasant break, or too much intricacy, or a hurried conclusion. They are usually languid in the commencement, and abrupt in the close; too slowly opened, and too hastily summed up. 'Guy Mannering' is one of those in which these two faults are least apparent. The plot of 'Peveril of the Peak,' might, perhaps, on the whole, have been considered the best, if it had not been spoiled by the finale.

"It may be said of the novels of Sir Walter Scott, as of the plays of Shakspeare, that though they never exhibit an attempt to enforce any distinct moral, they are, on the whole, favourable to morality. They tend (to use a common expression) to keep the heart in its right place. They inspire generous emotions, and a warm-hearted and benevolent feeling towards our fellow-creatures; and, for the most part, afford a just and unperverted view of human character and conduct.

"Sir Walter Scott and Lord Byron have often been compared; and the question has been mooted to which we should assign superiority of genius. It is one of those questions which can scarcely be decided; but, if asked our opinion,—we say to Sir Walter Scott,—and for these reasons: Sir Walter Scott does not appear like Lord Byron, to have written under the influence of morbid excitement, or availed himself of the resources of egotism. He did not draw from out the burning well of his own stormy passions. He has been the master of his imagination, rather than the slave. He has controlled it as with the rod of an enchanter, and compelled it to do his bidding, instead of becoming, like the frantick Pythoness, the utterer of the eloquent ravings which were prompted by the demon that possessed her. His writings display a calm consciousness of power. There is in them nothing of the feverishness of distemper; and they are not sullied and corroded by the operation of human passions. He seems to have looked forth upon nature, serene and unruffled, from the watchtower of a commanding intellect.

"Time may raise up other writers, whose comparative greatness may deprive him of his present eminence; but it cannot deprive him of the merit of originality, and of having first opened a new and delightful path in literature. Not in a presumptuous spirit of prophecy, but as a token of our present admiration, we will say, that we think his novels likely to endure as long as the language in which they are written."

The last publication of the Author of Waverley, was the Fourth Series of the "Tales of my Landlord," 1832, at the conclusion of which appears the following most affecting passage:—

"The gentle reader is acquainted, that these are, in all probability, the last tales which it will be the lot of the Author to submit to the publick. He is now on the eve of visiting foreign parts; a ship of war is commissioned by its Royal Master to carry the Author of Waverley to climates in which he may possibly obtain such a restoration of health as may serve to spin his thread to an end in his own country. Had he continued to prosecute his usual literary labours, it seems indeed probable, that at the term of years he has already attained, the bowl, to use the pathetick language of Scripture, would have been broken at the fountain; and little can one, who has enjoyed, on the whole, an uncommon share of the most inestimable of worldly blessings, be entitled to complain, that life, advancing to its period, should be attended with its usual proportion of shadows and storms. They have affected him at least in no more painful manner than is inseparable from the discharge of this part of the debt of humanity. Of those whose relation to him in the ranks of life might have insured him their sympathy under indisposition, many are now no more; and those who may yet follow in his wake, are entitled to expect, in bearing inevitable evils, an example of firmness and patience, more especially on the part of one who has enjoyed no small good fortune during the course of his pilgrimage.

"The publick have claims on his gratitude, for which the Author of Waverley has no adequate means of expression; but he may be permitted to hope, that the powers of his mind such as they are, may not have a different date from those of his body; and that he may again meet his patronising friends, if not exactly in his old fashion of literature, at least in some branch, which may not call forth the remark, that—

"Superfluous lags the veteran on the stage.""

GALVANICK EXPERIMENT ON THE DEAD BODY OF A CRIMINAL.

The Louisville Journal gives the particulars of an experiment in the laboratory of the Louisville Medical Institute, by Professor Yandall on the body of a man who had been executed for murder an hour and ten minutes before, and while the body was still warm.

"The positive pole of the battery was applied to the spinal cord or phrenick nerve, and the negative pole to the diaphragm, by which all the muscles of respiration were thrown into prompt and vigorous action, producing the appearance of a violent effort to breathe. The neck was bent, and the head partly raised from the table—the arms were quickly thrown up, and the chest at the same time heaving and sinking, the subject seemed to cough, and nothing was wanting but the sound, and the lustre of the living eye, to render the illusion complete.

"The negative pole of the instrument touching the nerve of the great toe, while the pole was in contact with the spinal cord, the fluid thus traversing the whole length of the body, a general tremour of the muscular system ensued—the arms were elevated and the fingers forcibly clenched—the legs were suddenly drawn up, and again extended—the head shook, and the respiratory muscles were convulsed.

"On passing the galvanick fluid through the nerves of the face, every strong passion which the human countenance can express was exhibited in quick succession and fearful intensity. Rage, indignation, scorn, horror, remorse, by turns distorted the features of the face, as the contact of the poles of the battery was renewed or broken. The subject as he lay convulsed seemed to be under the dominion of a terrifick dream—a prey to intense anguish or remorse—or engaged in some desperate mental contest, and unable to speak. The movements of life were mimicked with a truth which rendered the effect not only striking but horrible—and the spectator, while he looked upon the contracted and agonized brow—the lip turned up as if in scorn or derision—the uplifted arm and heaving chest, might also have fancied the subject to be in a deep, disturbed sleep, and glared upon by the ghost of the unhappy victim. It was a study for the painter or the tragick actor, and might have suggested to a poet, a passage as thrilling as the ghost-scene in Macbeth, in which the murdered Banquo rises and 'shakes his gory locks,' at the affrighted king."

Boston Liberality.—A late number of the North American Review states, on the authority of President Quincy, that upward of one million eight hundred thousand dollars have, by the liberality of Boston alone, been contributed within the last thirty years toward objects of a moral, religious, and literary character. Of this sum, $345,400 were given to the Massachusetts Hospital; $222,696 to Harvard College; $79,532 to the Female Orphan Asylum; and $75,000 to the Athenæum. This estimate of donations is only brought down to 1830. Since that time many other munificent donations have been made; especially for the establishment of the Blind Asylum, and an institution for free lectures on science and literature, to which an endowment of $250,000 has been made by a young gentleman of that city.

[From the American Journal of Science and Arts.]

SOME ACCOUNT OF TWO VISITS TO THE MOUNTAINS IN ESSEX COUNTY, NEW YORK, IN THE YEARS 1836 AND 1837; WITH A SKETCH OF THE NORTHERN SOURCES OF THE HUDSON.

BY W. C. REDFIELD.

NOTWITHSTANDING the increase of population, and the rapid extension of our settlements since the peace of 1783, there is still found; in the northern part of the state of New York, an uninhabited region of considerable extent; which presents all the rugged characters and picturesque features of a primeval wilderness. This region constitutes the most elevated portion of the great triangular district, which is situated between the line of the St. Lawrence, the Mohawk, and Lake Champlain. That portion of it which claims our notice in the following sketches, lies mainly within the county of Essex, and the contiguous parts of Hamilton and Franklin, and comprises the head waters of the principal rivers in the northern division of the state.

In the summer of 1836, the writer had occasion to visit the new settlement at McIntyre, in Essex county, in company with the proprietors of that settlement, and other gentlemen who had been invited to join the expedition. Our party consisted of the Hon. Archibald McIntyre of Albany, the late Judge McMartin of Broadalbin, Montgomery county, and David Henderson, Esq. of Jersey City, proprietors, together with David C. Colden, Esq. of Jersey City, and Mr. James Hall, assistant state geologist for the northern district.

FIRST JOURNEY TO ESSEX.

We left Saratoga on the 10th of August, and after halting a day at Lake George, reached Ticonderoga on the 12th; where at 1 P. M. we embarked on board one of the Lake Champlain steamboats, and were landed soon after 3 P. M., at Port Henry, two miles N. W. from the old fortress of Crown Point. The remainder of the day, and part of the 14th, were spent in exploring the vicinity, and examining the interesting sections which are here exhibited of the junction of the primary rocks with the transition series, near the western borders of the lake, and we noticed with peculiar interest the effect which appears to have been produced by the former upon the transition limestone at the line of contact; the latter being here converted into white masses, remarkably crystalline in their structure, and interspersed with scales of plumbago.

On the evening of the 13th, we were entertained with a brilliant exhibition of the Aurora Borealis, which, between 7 and 8 P. M., shot upward in rapid and luminous coruscations from the northern half of the horizon, the whole converging to a point apparently fifteen degrees south of the zenith. This appearance was succeeded by luminous vertical columns or pencils of the color, alternately, of a pale red and a peculiar blue, which were exhibited in great beauty.

On the 13th, we left Port Henry on horseback, and, after a ride of six miles, left the cultivated country on the borders of the lake and entered the forest. The road on which we travelled is much used for the transportation of sawed pine lumber from the interior, there being in the large township of Moriah, as we were informed, more than sixty saw-mills. Four hours of rough travelling brought us to Weatherhead's, at West Moriah, upon the Schroon river, or East Branch of the Hudson, thirteen miles from Lake Champlain. An old state road from Warren county to Plattsburgh, passes through this valley, along which is established the line of interior settlements, in this part of the county. Our further route to the westward was upon a newer and more imperfect road, which has been opened from this place through the unsettled country in the direction of Black river, in Lewis county. We ascended by this road the woody defiles of the Schroon mountain-ridge, which, as seen from Weatherhead's, exhibits, in its lofty and apparently continuous elevations, little indications of a practicable route. Having passed a previously unseen gorge of this chain, we continued our way under a heavy rain, till we reached the dwelling of Israel Johnson, who has established himself at the outlet of a beautiful mountain lake, called Clear Pond, nine miles from Schroon river. This is the only dwelling-house upon the new road.

To travel in view of the log fences and fallen trees of a thickly wooded country, affords a favorable opportunity for observing the specific spiral direction which is often found in the woody fibre of the stems of forest trees, of various species. In a large proportion of the cases which vary from a perpendicular arrangement, averaging not less than seven out of eight, the spiral turn of the fibres of the stem in ascending from the ground, *is towards the left*, or in popular language, against the sun. It is believed that no cause has been assigned for this by writers on vegetable physiology. It may be remarked, incidentally, that the direction, in these cases, coincides with the direction of rotation, which is exhibited in our great storms, as well as with that of the tornado which visited New Brunswick in 1835, and other whirlwinds of like character, the traces of which have been carefully examined.

We resumed our journey on the morning of the 15th, and at 9 A. M. reached the Boreas branch of the Hudson, eight miles from Johnson's. Soon after 11 A. M., we arrived at the Main Northern Branch of the Hudson, a little below its junction with the outlet of Lake Sanford. Another quarter of an hour brought us to the landing at the outlet of the lake, nine miles from the Boreas. Taking leave of the "road," we here entered a difficult path which leads up the western side of the lake, and a further progress of six miles brought us to the Iron Works and settlement at McIntyre, where a hospitable reception awaited us.

SETTLEMENT AT MCINTYRE.—MINERAL CHARACTER OF THE COUNTRY.

At this settlement, and in its immediate vicinity, are found beds of iron ore of great, if not unexampled extent, and of the best quality. These deposites have been noticed in the first report of the state geologists, and have since received from Professor Emmons a more extended examination. Lake Sanford is a beautiful sheet of water, of elongated and irregular form, and about five miles in extent. The Iron Works are situated on the north fork of the Hudson, a little below the point where it issues from Lake Henderson, and over a mile above its entrance into Lake Sanford. The fall of the stream between the two lakes is about one hundred feet. This settlement is situated in the upper plain of th

Hudson, and at the foot of the principal mountain nucleus, which rises between its sources and those of the Au Sable.

A remarkable feature of this mountain district, is the uniformity of the mineral character of its rocks, which consist chiefly of the dark colored and sometimes opalescent feldspar, known as *labradorite* or Labrador feldspar. Towards the exterior limits of the formation, this material is accompanied with considerable portions of green augite or pyroxene, but in the more central portions of the formation, this feldspar often constitutes almost the only ingredient of the rocks. It seems not a little repugnant to our notions of the primary rocks, to find a region of this extent which is apparently destitute of mica, quartz, and hornblende, and also, of any traces of stratified gneiss. This labradoritic formation commences at the valley of the Schroon river, and extends westerly into the counties of Hamilton and Franklin, to a limit which is at present unknown. Its northern limit appears to be at the plains which lie between the upper waters of the Au Sable and Lake Placid, and its southern boundary which extends as far as Schroon, has not been well defined. It appears probable that it comprises an area of six or eight hundred square miles, including most of the principal mountain masses in this part of the state. So far as is known to the writer, no foreign rocks or boulders of any size or description are found in this region, if we are not to except as such, the fragments of the dykes, chiefly of trap, by which this rock is frequently intersected.

The surface of the rock where it has been long exposed to the weather, has commonly a whitened appearance, owing to its external decomposition. Blocks and boulders of this rock are scattered over the country in a southerly and westerly direction, as far as the southern boundary of the state of New York, as appears from the Report of Professor Emmons and other observations; and they are often lodged on the northern declivity of hills, high above the general level of the country. But it is not elsewhere found in place within the limits of the United States; the nearest locality at present known, being about two hundred miles north of Quebec, on the northeastern border of Lake St. John, from whence it appears to extend to the Labrador coast.[*] The most eastern of these transported boulders known to the writer is one of about one hundred tuns weight, at Cocksackie, on the Hudson, one hundred and thirty miles south from the labradoritic mountains. This block is found on the northern shoulder of a hill, three hundred feet above the river, and one hundred and fifty feet above the general level of the adjacent country.[†]

FIRST EXPEDITION TO THE MOUNTAINS.—ENCAMPMENT.

It has been noticed that the north branch of the Hudson, after its exit from Lake Sanford, joins the main branch of the river, about seven miles below the settlement at McIntyre. Having prepared for an exploration up the latter stream, we left McIntyre on the 17th of July, with three assistants, and the necessary equipage for encampment. Leaving the north branch, we proceeded through the woods in a southeasterly direction, passing two small lakes, till, at the distance of three or four miles from the settlement, we reached the southern point of one of the mountains, and assuming here a more easterly course, we came, about noon, to the main branch of the river. Traces of wolves and deer were frequently seen, and we discovered also the recent tracks of a moose, *Cervus Alces, L.* We had also noticed on the 16th, at the inlet of Lake Sanford, the fresh and yet undried footsteps of a panther, which apparently had just crossed the inlet.

The beaches of the river, on which, by means of frequent fordings, we now travelled, are composed of rolled masses of the labradoritic rock, and small opalescent specimens not unfrequently showed their beautiful colors in the bed of the stream. As we approached the entrance of the mountains, the ascent of the stream sensibly increased, and about 4 P. M., preparations were commenced for our encampment. A shelter, consisting of poles and spruce bark, was soon constructed by the exertions of our dexterous woodsmen. The camp-fire being placed on the open side, the party sleep with their heads in the opposite direction, under the lower part of the roof.

On the morning of the 18th, we resumed the ascent of the stream by its bed, in full view of two mountains, from between which the stream emerges. About two miles from our camp, we entered the more precipitous part of the gorge through which the river descends. Our advance here became more difficult and somewhat dangerous. After ascending falls and rapids, seemingly innumerable, we came about noon to an imposing cascade, closely pent between two steep mountains, and falling about eighty feet into a deep chasm, the walls of which are as precipitous as those of Niagara, and more secluded. With difficulty we emerged from this gulf, and continued our upward course over obstacles similar to the preceding, till half past 2 P. M., when we reached the head of this terrific ravine. From a ledge of rock which here crosses and obstructs the stream, the river continues, on a level which may be called the Upper Still Water, for more than a mile in a westerly and northwesterly direction, but continues pent in the bottom of a deep mountain gorge or valley, with scarce any visible current. To this point the river had been explored by the proprietors on a former occasion.

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[*] See Lieut. Baddeley's communications in the Transactions of the Quebec Literary and Historical Society, Vol. I.

[†] The rocks found in the interior of the United States, west of the Hudson river, exhibit strata composed of shells, and other marine remains, which in some unknown period have evidently formed the floor of the ancient ocean. Geologists and other well-informed persons, will therefore find little difficulty in ascribing the extensive transfer of these heavy boulders to the agency of floating icebergs, or large masses of ice which were borne by the polar currents on the surface of the ancient sea, while the greater part of our continent was yet beneath its waters.

To those who think the climate of these parallels an objection to this theory, it may be remarked that huge glaciers are still formed in the mountain ravines at the head of the numerous bays which penetrate the southern extremes of the Andes, in a climate less rigid than that of the Essex mountains; and that icebergs are still met with in the Southern ocean, in latitudes as low as that of North Carolina, in cases where they have not been intercepted in their course by a warm current, like that of the gulf stream. Even on the American coast, and between it and the gulf stream, large ice islands were found in the summer of 1836, almost in the latitude of Albany.

It is worthy of notice that the labradoritic boulders abovementioned, instead of being brought from the N. W. and N. N. W., as in the case of the boulders of rocks in lower positions which are found so frequently in New England, have evidently been carried by a north or northeast current in a south or southwesterly direction, and corresponding nearly to the present course of the great polar current, along the coast of Greenland, Labrador, and the shores of the United States.

LAKE COLDEN.—MOUNTAIN PEAKS.

Emerging from this valley, we found the river to have a meandering course of another mile, in a northwesterly and northerly direction, with a moderate current, until it forks into two unequal branches. Leaving the main branch which here descends from the east, we followed the northern tributary to the distance of two hundred yards from the forks, where it proved to be the outlet of a beautiful lake, of about a mile in extent. This lake, to which our party afterward gave the name of Lake Colden, is situated between two mountain peaks which rise in lofty grandeur on either hand. We made our second camp at the outlet of this lake, and in full view of its interesting scenery.

Previous to reaching the outlet, we had noticed on the margin of the river, fresh tracks of the wolf and also of the deer, both apparently made at the fullest speed, and on turning a point we came upon the warm and mangled remains of a fine deer, which had fallen a sacrifice to the wolves; the latter having been driven from their savage repast by our unwelcome approach. There appeared to have been two of the aggressive party, one of which, by lying in wait, had probably intercepted the deer in his course to the lake, and they had nearly devoured their victim in apparently a short space of time.

The great ascent which we had made from our first encampment, and the apparent altitude of the mountain peaks before us, together with the naked condition of their summits, rendered it obvious that the elevation of this mountain group had been greatly underrated; and we were led to regret our want of means for a barometrical measurement. The height of our present encampment above Lake Sanford was estimated to be from ten to twelve hundred feet, and the height of Lake Colden, above tide, at from one thousand eight hundred, to two thousand feet, the elevation of Lake Sanford being assumed from such information as we could obtain, to be about eight hundred feet. The elevation of the peaks on either side of Lake Colden, were estimated from two thousand, to two thousand five hundred feet above the lake. These conclusions were entered in our notes, and are since proved to have been tolerably correct, except as they were founded on the supposed elevation of Lake Sanford, which had been very much underrated.

August 19th. The rain had fallen heavily during the night, and the weather was still such as to preclude the advance of the party. But the ardor of individuals was hardly to be restrained by the storm; and during the forenoon, Mr. Henderson, with John Cheney, our huntsman, made the circuit of Lake Colden, having in their course beaten up the quarters of a family of panthers, to the great discomfiture of Cheney's valorous dog. At noon, the weather being more favorable, Messrs. McIntyre, McMartin and Hall, went up the border of the lake to examine the valley which extends beyond it in a N. N. E. and N. E. direction, while the writer, with Mr. Henderson, resumed the ascent of the main stream of the Hudson. Notwithstanding the wet, and the swollen state of the stream, we succeeded in ascending more than two miles in a southeasterly and southerly direction, over a constant succession of falls and rapids of an interesting character. In one instance, the river has assumed the bed of a displaced trap dyke, by which the rock has been intersected, thus forming a chasm or sluice of great depth, with perpendicular walls, in which the river is precipitated in a cascade of fifty feet.

Before returning to camp, the writer ascended a neighboring ridge for the purpose of obtaining a view of the remarkably elevated valley from which the Hudson here issues. From this point a mountain peak was discovered, which obviously exceeded in elevation the peaks which had hitherto engaged our attention. Having taken the compass bearing of this peak, further progress was relinquished, in hope of resuming the exploration of this unknown region on the morrow.

AVALANCHE LAKE.—RETURN TO THE SETTLEMENT.

On returning to our camp, we met the portion of our party which had penetrated the valley north of the lake, and who had there discovered another lake of nearly equal extent, which discharges by an outlet that falls into Lake Colden. On the two sides of this lake, the mountains rise so precipitously as to preclude any passage through the gorge, except by water. The scenery was described as very imposing, and some fine specimens of the opalescent rock were brought from this locality. Immense slides or avalanches had been precipitated into this lake from the steep face of the mountain, which induced the party to bestow upon it the name of Avalanche lake.

Another night was passed at this camp, and the morning of the 20th opened with thick mists and rain, by which our progress was further delayed. It was at last determined, in view of the bad state of the weather and our short stock of provisions, to abandon any further exploration at this time, and to return to the settlement. Retracing our steps nearly to the head of the Still Water, we then took a westerly course through a level and swampy tract, which soon brought us to the head-waters of a stream which descends nearly in a direct course to the outlet of Lake Henderson. The distance from our camp at Lake Colden to McIntyre, by this route, probably does not exceed six miles. Continuing our course, we reached the settlement without serious accident, but with an increased relish for the comforts of civilization.

This part of the state was surveyed into large tracts, or townships, by the colonial government, as early as 1772, and lines and corners of that date, as marked upon the trees of the forest, are now distinctly legible. But the topography of the mountains and streams in tho upper country, appears not to have been properly noted, if at all examined, and in our best maps, has either been omitted or represented erroneously. Traces have been discovered near McIntyre of a route, which the natives sometimes pursued through this mountain region, by way of Lakes Sanford and Henderson, and thence to the Preston Ponds and the head-waters of the Racket. But these savages had no inducement to make the laborious ascent of steril mountain peaks, which they held in superstitious dread, or to explore the hidden sources of the rivers which they send forth. Even the more hardy huntsman of later times, who when trapping for northern furs, has marked his path into the recesses of these elevated forests, has left no traces of his axe higher than the borders of Lake Colden, where some few marks of this description may be perceived. All here seems abandoned to solitude; and even the streams and lakes of this upper region are destitute of the trout, which are found so abundant below the cataracts of the mountains.

WHITEFACE MOUNTAIN.—THE NOTCH.

At a later period of the year, Professor Emmons, in the execution of his geological survey, and accompanied by Mr. Hall, his assistant, ascended the Whiteface mountain, a solitary peak of different formation, which rises in the north part of the county. From this point, Prof. E. distinctly recognised as the highest of the group, the peak on which the writer's attention had been fastened at the termination of our ascent of the Hudson, and which he describes as situated about sixteen miles south of Whiteface. Prof. E. then proceeded southward through the remarkable Notch, or pass, which is described in his Report, and which is situated about five miles north from McIntyre. The Wallface mountain, which forms the west side of the pass, was ascended by him on this occasion, and the height of its perpendicular part was ascertained to be about twelve hundred feet, as may be seen by reference to the geological Report which was published in February last, by order of the Legislature. It appears by the barometrical observations made by Prof. Emmons, that the elevation of the tableland which constitutes the base of these mountains at McIntyre, is much greater than from the result of our inquiries we had been led to suppose.

SECOND JOURNEY TO ESSEX COUNTY.

The interest excited in our party by the short exploration which has been described, was not likely to fail till its objects were more fully accomplished. Another visit to this alpine region was accordingly made in the summer of the present year. Our party on this occasion consisted of Messrs. McIntyre, Henderson and Hall, (the latter at this time geologist of the western district of the state,) together with Prof. Torrey, Prof. Emmons, Messrs. Ingham and Strong of New York, Miller of Princeton, and Emmons, Jr. of Williamstown.

We left Albany on the 28th of July, and took steamboat at Whitehall on the 29th. At the latter place an opportunity was afforded us to ascend the eminence known as Skeenes' mountain, which rises about five hundred feet above the lake. Passing the interesting ruins of Ticonderoga and the less imposing military works of Crown Point, we again landed at Port Henry and proceeded to the pleasant village of East Moriah, situated upon the high ground, three and a half miles west of the lake. This village is elevated near eight hundred feet above the lake, and commands a fine view of the western slope of Vermont, terminating with the extended and beautiful outline of the Green Mountains.

We left East Moriah on the 31st, and our first day's ride brought us to Johnson's at Clear Pond. The position of the High Peak of Essex was now known to be but a few miles distant, and Johnson informed us that the snow remained on a peak which is visible from near his residence, till the 17th of July of the present year. We obtained a fine view of this peak the next morning, bearing from Johnson's N. 20° west, by compass, a position which corresponded to the previous observations; the variation in this quarter being somewhere betweeen 8° and 9° west.

Descending an abrupt declivity from Johnson's, we arrive at a large stream which issues from a small lake farther up the country, and receiving here the outlet of Clear Pond, discharges itself into the Schroon river. The upper portions of these streams and the lakes from which they issue, as well as the upper course of the Boreas with its branches and mountain lakes, are not found on our maps. From the stream beforementioned, the road ascends the Boreas ridge or mountain chain by a favorable pass, the summit of which is attained about four miles from Johnson's. Between the Boreas and the main branch of the Hudson, we encounter a subordinate extension of the mountain group which separates the sources of these streams, through the passes of which ridge the road is carried by a circuitous and uneven route.

We reached the outlet of Lake Sanford about noon on the 1st of August, and found two small boats awaiting our arrival. Having embarked we were able fully to enjoy the beauty and grandeur of the lake and mountain scenery which is here presented, all such views being, as is well known, precluded by the foliage while travelling in the forests. The echoes which are obtained at a point on the upper portion of the lake, are very remarkable for their strength and distinctness. The trout are plentiful in this lake, as well as in Lake Henderson and all the neighboring lakes and streams. We arrived at McIntyre about 4 P. M., and the resources of the settlement were placed in requisition by the hospitable proprietors, for our expedition to the source of the Hudson.

BAROMETRICAL OBSERVATIONS ON THE ROUTE.

The following table shows the observations made with the barometer at different points on our route, and the elevation above tide water as deduced from these observations, and others made on the same days at Albany by Matthew Henry Webster, Esq. No detached thermometer was used, the general exposure of the attached thermometers to the open air being such as to indicate the temperature of the air, at both the upper and lower stations, with tolerable accuracy. In the observations with the mountain barometer a correction is here made for variation in the cistern, equal to one fiftieth of the depression which was found below the zero adjustment at thirty inches.

It is proper also to state, that the two mountain barometers made use of, continued in perfectly good order during our tour, and agreed well with each other in their zero adjustment, which is such as will give a mean annual height of full thirty inches at the sea level; but, like other barometers which have leather-bottomed cisterns, are liable to be somewhat affected by damp and warm weather when in the field, and it is possible that this hygrometric depression may have slightly affected some of the observations which here follow.

Date.	Place of observation.	Hour.	Upper station.—Barom. correct'd 1-50 for variation of cistern.		Lower station.—60 feet above tide at Albany		Corrected height in feet, above tide.
			Att. Th.	Barom.	Att. Th.	Barom.	
July 29,	Lake Champlain at White Hall, - - -	9 A. M.	72°	29.91	-	-	90
"	Summit of Skeenes' Mountain at Do.* - -	8.40 "	71	29.39	-	-	588
"	Lake Champlain at Port Henry, - - -	5 P. M.	73	29.91			
"	East Moriah, Four Corners,† - - -	5.45 "	71	29.09	-	-	880
July 31,	Road summit, 9 miles from Lake Champlain,	10.45 A. M.	71	28.42	72°	29.94	1.546
"	West Moriah, at Weatherhead's, Schroon valley,	1.15 P. M.	75	28.86	75	"	1.117
"	Road summit, pass of Schroon Mountain, -	4 "	69	28.57	73	29.93	1.375
"	Johnson's, at Clear Pond, - - - - -	5.50 "	67	27.93	72	"	2.012
Aug. 1.	Do. Do. Second observation,‡	6.20 A. M.	62	28.03	70	30.04	1 991
"	Road summit, ridge west of Johnson's, -	8 "	64	27.45	71	"	2.592
"	Boreas River bridge, - - - - - -	9.45 "	69	28.01	73	30.02	2.026
"	Hudson River bridge, - - - - - -	12.30 P. M.	78	28.19	79	29.95	1.810
"	Lake Sanford inlet, - - - - - -	4 "	76	28.17	78	"	1 826
"	Iron Works at McIntyre, - - - -	4.20 "	76	28.11	77	"	1.889
"	Lake Henderson outlet, - - - -	4.40 "	75	28.06	76	"	1.936

Lake Champlain is about ninety feet above tide water.

It appears from the above that the two principal depressions in the section of country over which this road passes, west of the Schroon valley, are in one case two thousand and in the other eighteen hundred feet in elevation.

SECOND EXPEDITION TO THE MOUNTAINS.

We left the settlement on the 3d of August, with five woodsmen as assistants, to take forward our provisions and other necessaries, and commenced our ascent to the higher region in a northeasterly direction, by the route on which we returned last year.

We reached our old camp at Lake Colden at 5 P. M. where we prepared our quarters for the night. The mountain peak which rises on the eastern side of this lake and separates it from the upper valley of the main stream of the Hudson, has received the name of Mount McMartin, in honor of one now deceased, who led the party of last year, and whose spirit of enterprise and persevering labors contributed to establishing the settlement at the great Ore Beds, as well as other improvements advantageous to this section of the state.

On the 4th, we once more resumed the ascent of the main stream, proceeding first in an easterly direction, and then to the southeast and south, over falls and rapids, till we arrived at the head of the great Dyke Falls. Calcedony was found by Prof. Emmons near the foot of these falls. Continuing our course on a more gradual rise, we soon entered upon unexplored ground, and about three miles from camp, arrived at the South Elbow, where the bed of the main stream changes to a northeasterly direction, at the point where it receives a tributary which enters from south-southwest. Following the former course, we had now fairly entered the High Valley which separates Mount McMartin from the High Peak on the southeast, but so enveloped were we in the deep growth of forest, that no sight of the peaks could be obtained. About a mile from the South Elbow we found another tributary entering from south-southeast, apparently from a mountain ravine which borders the High Peak on the west. Some beautifully opalescent specimens of the labradorite were found in the bed of this stream.

HIGH VALLEY OF THE HUDSON.

Another mile of our course brought us to a smaller tributary from the north, which from the alluvial character of the land near its entrance is called the High Meadow fork. This portion of our route is in the centre of this mountain valley, and has the extraordinary elevation of three thousand and seven hundred feet above tide. We continued the same general course for another mile, with our route frequently crossed by small falls and cascades, when we emerged from the broader part of the valley and our course now became east-southeast and southeast, with a steeper ascent and higher and more frequent falls in the stream. The declivity of the mountain which encloses the valley on the north and that of the great peak, here approximate closely to each other, and the valley assumes more nearly the character of a ravine or pass between two mountains, with an increasing ascent, and maintains its course for two or three miles, to the summit of the pass. Having accomplished more than half the ascent of this pass we made our camp for the night, which threatened to be uncommonly cold and caused our axemen to place in requisition some venerable specimens of the white birch which surrounded our encampment.

PHENOMENA OF MOUNTAIN SLIDES.

A portion of the deep and narrow valley in which we were now encamped, is occupied by a longitudinal ridge consisting of boulders and other *debris*, the materials, evidently, of a tremendous slide or avalanche, which at some unknown period has descended from the mountain; the momentum of the mass in its descent having accumulated and pushed forward the ridge, after the manner of the late slide at Troy, beyond the centre of the valley or gorge into which it is discharged. It appears indeed that the local configuration of surface in these mountain valleys, except where the rock is in place, ought to be ascribed chiefly to such causes. It seems apparent also, that the Hudson, at the termination of its descent from the High Valley, once discharged itself into Lake Colden, the latter extending southward at that period to the outlet of the Still Water, which has been noticed in our account of the former exploration. This portion of the ancient bed of the lake has not only been filled, and the bed of the stream as well as the remaining surface of the lake raised above the former level, but a portion of the finer *debris* brought down by the main stream, has flowed northwardly into the present lake and filled all its southern portions with a solid and extensive shoal, which is now fordable at a low stage of the water. The fall of heavy slides from the mountains appears also to have separated Avalanche lake from Lake Colden, of which it once formed a part, and so vast is the deposit from these slides as to have raised the former lake about eighty feet above the surface of the latter. In cases where these slides have been extensive, and rapid in their descent, large hillocks or protuberances are formed in the valleys; and the denudation from above, together with the accumulation below, tends gradually to diminish the extent and frequency of their occurrence. But the slides still recur, and their pathway may often be perceived in the glitter of the naked rock, which is laid bare in their course from the summit of the mountain toward its base, and these traces constitute one of the most striking features in the mountain scenery of this region.

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* Four hundred and ninety eight feet above Lake Champlain.

† Seven hundred and ninety feet above do.

‡ Mean of the two sets of observations two thousand feet, nearly.

MAIN SOURCE OF THE HUDSON.—FALL OF THE AU SABLE.

On the morning of the fifth, we found that ice had formed in exposed situations. At an early hour we resumed our ascending course to the southeast, the stream rapidly diminishing and at length becoming partially concealed under the grass-covered boulders. At 8.40 A. M. we arrived at the head of the stream on the summit of this elevated pass, which here forms a beautiful and open mountain meadow, with the ridges of the two adjacent mountains rising in an easy slope from its sides. From this little meadow, which lies within the present limits of the town of Keene, the main branch of the Hudson and a fork of the east branch of the Au Sable commence their descending course in opposite directions, for different and far distant points of the Atlantic Ocean. The elevation of this spot proves by our observations to be more than four thousand seven hundred feet above tide water; being more than nine hundred feet above the highest point of the Catskill mountains, which have so long been considered the highest in this state.

The descent of the Au Sable from this point is most remarkable. In its comparative course to Lake Champlain, which probably does not exceed forty miles, its fall is more than four thousand six hundred feet! This, according to our present knowledge, is more than twice the descent of the Mississippi proper, from its source to the ocean. Waterfalls of the most striking and magnificent character are known to abound on the course of the stream.

HIGH PEAK OF ESSEX.

Our ascent to the source of the Hudson had brought us to an elevated portion of the highest mountain peak which was also a principal object of our exploration, and its ascent now promised to be of easy accomplishment by proceeding along its ridge, in a W. S. W. direction. On emerging from the pass, however, we immediately found ourselves entangled in the zone of dwarfish pines and spruces, which with their numerous horizontal branches interwoven with each other, surround the mountain at this elevation. These gradually decreased in height, till we reached the open surface of the mountain, covered only with mosses and small alpine plants, and at 10 A. M. the summit of the High Peak of Essex was beneath our feet.

The aspect of the morning was truly splendid and delightful, and the air on the mountain-top was found to be cold and bracing. Around us lay scattered in irregular profusion, mountain masses of various magnitudes and elevations, like to a vast sea of broken and pointed billows. In the distance lay the great valley or plain of the St. Lawrence, the shining surface of Lake Champlain, and the extensive mountain range of Vermont. The nearer portions of the scene were variegated with the white glare of recent mountain slides as seen on the sides of various peaks, and with the glistening of the beautiful lakes which are so common throughout this region. To complete the scene, from one of the nearest settlements a vast volume of smoke soon rose in majestic splendor, from a fire of sixty acres of forest clearing, which had been prepared for the "burning," and exhibiting in the vapor which it imbodied, a gorgeous array of the prismatic colors, crowned with the dazzling beams of the mid-day sun.

The summit, as well as the mass of the mountain, was found to consist entirely of the labradoritic rock, which has been mentioned as constituting the rocks of this region, and a few small specimens of hypersthene were also procured here. On some small deposites of water, ice was found at noon, half an inch in thickness. The source of the Hudson, at the head of the High Pass, bears N. 70° E. from the summit of this mountain, distant one and a quarter miles, and the descent of the mountain is here more gradual than in any other direction. Before our departure we had the unexpected satisfaction to discover, through a depression in the Green mountains, a range of distant mountains in nearly an east direction, and situated apparently beyond the valley of the Connecticut; but whether the range thus seen, be the White mountains of New Hampshire, or that portion of the range known as the mountains of Franconia, near the head of the Merrimack, does not fully appear. Our barometrical observations on this summit show an elevation of five thousand four hundred and sixty-seven feet. This exceeds by about six hundred feet, the elevation of the Whiteface mountain, as given by Prof. Emmons; and is more than sixteen hundred and fifty feet above the highest point of the Catskill mountains.*

WEAR OF THE RIVER BOULDERS.

The descent to our camp was accomplished by a more direct and far steeper route than that by which we had gained the summit, and our return to Lake Colden afforded us no new objects of examination. The boulders which form the bed of the stream in the upper Hudson, are often of great magnitude, but below the mountains, where we commenced our exploration last year, the average size does not much exceed that of the paving stones in our cities;—so great is the effect of the attrition to which these boulders are subject in their gradual progress down the stream. Search has been made by the writer, among the gravel from the bottom and shoals of the Hudson near the head of tidewater, for the fragmentary remains of the labradoritic rock, but hitherto without success. We may hence infer that the whole amount of this rocky material, which, aided by the ice, and the powerful impulse of the annual freshets, finds its way down the Hudson, a descent of from two thousand to four thousand seven hundred feet, in a course of something more than one hundred miles, is reduced by the combined effects of air, water, frost, and attrition, to an impalpable state, and becomes imperceptibly deposited in the alluvium of the river, or continuing suspended, is transferred to the waters of the Atlantic.

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* The High Peak of Essex is supposed to be visible from Burlington, Vt., bearing S. 63° or 64° W. by compass; the variation at Burlington being 9°45′ west.

GREAT TRAP DYKE.

On the 7th of August we visited Avalanche lake, and examined the great dyke of sienitic trap in Mount McMartin, which cuts through the entire mountain in the direction from west-northwest to east-southeast. This dyke is about eighty feet in width, and being in part broken from its bed by the action of water and ice, an open chasm is thus formed in the abrupt and almost perpendicular face of the mountain. The scene on entering this chasm is one of sublime grandeur, and its nearly vertical walls of rock, at some points actually overhang the intruder, and seem to threaten him with instant destruction. With care and exertion this dyke may be ascended, by means of the irregularities of surface which the trap rock presents, and Prof. Emmons by this means accomplished some twelve or fifteen hundred feet of the elevation. His exertions were rewarded by some fine specimens of hypersthene and of the opalescent labradorite, which he here obtained. The summit of Mount McMartin is somewhat lower than those of the two adjacent peaks, and is estimated at four thousand nine hundred and fifty feet above tide.

The distance from the outlet of Lake Colden to the opposite extremity of Avalanche Lake is estimated at two and a quarter miles. The stream which enters the latter at its northern extremity, from the appearance of its valley, is supposed to be three fourths of a mile in length, and the fall of the outlet in its descent to Lake Colden is estimated, as we have seen, at eighty feet. The head waters of this fork of the Hudson are hence situated farther north than the more remote source of the Main Branch, which we explored on the 4th and 5th, or perhaps than any other of the numerous tributaries of the Hudson. The elevation of Avalanche Lake is between two thousand nine hundred and three thousand feet above tide, being undoubtedly the highest lake in the United States, east of the Rocky Mountains.

The mountain which rises on the west side of this lake and separates its valley from that of the Au Sable, is perhaps the largest of the group. Its ridge presents four successive peaks, of which the most northern save one, is the highest, and is situated immediately above the lake and opposite to Mt. McMartin. It has received the name of Mt. McIntyre, in honor of the late Controller of this state, to whose enterprise and munificence, this portion of the country is mainly indebted for the efficient measures which have been taken to promote its prosperity.

ASCENT OF MOUNT McINTYRE.

On the morning of the 8th, we commenced the ascent of Mount McIntyre through a steep ravine, by which a small stream is discharged into Lake Colden. The entire ascent being comprised in little more than a mile of horizontal distance, is necessarily difficult, and on reaching the lower border of the belt of dwarf forest, we found the principal peak rising above us on our right, with its steep acclivity of naked rock extending to our feet. Wishing to shorten our route, we here unwisely abandoned the remaining bed of the ravine, and sustaining ourselves by the slight inequalities of surface which have resulted from unequal decomposition, we succeeded in crossing the apparently smooth face of the rock by an oblique ascent to the right, and once more obtained footing in the woody cover of the mountain. But the continued steepness of the acclivity, and the seemingly impervious growth of low evergreens on this more sheltered side, where their horizontal and greatly elongated branches were most perplexingly intermingled, greatly retarded our progress. Having surmounted this region, we put forward with alacrity, and at 1 P. M. reached the summit.

The view which was here presented to us differs not greatly in its general features from that obtained at the High Peak, and the weather, which now began to threaten us with a storm, was less favorable to its exhibition. A larger number of lakes were visible from this point, and among them the beautiful and extensive group at the sources of the Saranac, which are known by the settlers as the "Saranac Waters." The view of the Still Water of the Hudson, lying like a silver thread in the bottom of its deep and forest-green valley, was peculiarly interesting. The opposite front of Mount McMartin exhibited the face of the great dyke and its passage through the summit, near to its highest point, and nearly parallel to the whitened path of a slide which had recently descended into Avalanche Lake. In a direction a little south of west, the great vertical precipice of the Wallface mountain at the Notch, distinctly met our view. Deeply below us on the northwest and north, lay the valley of the west branch of the Au Sable, skirted in the distance by the wooded plains which extend in the direction of Lake Placid and the Whiteface mountain.

Mount McIntyre is also intersected by dykes, which cross it at the lowest points of depression between its several peaks, and the more rapid erosion and displacement of these dykes has apparently produced the principal ravines in its sides. The highest of these peaks on which we now stood, is intersected by cracks and fissures in various directions, apparently caused by earthquakes. Large blocks of the same labradoritic rock as the mass of the mountain, lay scattered in various positions on the summit, which afforded nearly the same growth of mosses and alpine plants as the higher peak visited on the 5th. Our barometrical observations show a height of near five thousand two hundred feet, and this summit is probably the second in this region, in point of elevation. There are three other peaks lying in a westerly direction, and also three others lying eastward of the main source of the Hudson, which nearly approach to, if they do not exceed, five thousand feet in elevation, making of this class, including Mount

McMartin, Whiteface, and the two peaks visited, ten in all. Besides these mountains there are not less than a dozen or twenty others that appear to equal or exceed the highest elevation of the Catskill group.

VISIT TO THE GREAT NOTCH.—RETURN TO THE SETTLEMENT.

The descent of the mountain is very abrupt on all sides, and our party took the route of a steep ravine which leads into the valley of the Au Sable, making our camp at nightfall near the foot of the mountain. The night was stormy, and the morning of the 9th opened upon us with a continued fall of rain, in which we resumed our march for the Notch, intending to return to the settlement by this route. After following the bed of the ravine till it joined the Au Sable, we ascended the latter stream, and before noon arrived at this extraordinary pass, which has been described by the state geologists, and which excites the admiration of every beholder. Vast blocks and fragments have in past ages fallen from the great precipice of the Wallface mountain on the one hand, and from the southwest extension of Mount McIntyre on the other, into the bottom of this natural gulf. Some of these blocks are set on end, of a height of more than seventy feet, in the moss-covered tops and crevices of which, large trees have taken root, and now shoot their lofty stems and branches high above the toppling foundation. The north branch of the Hudson, which passes through Lakes Henderson and Sanford, takes its rise in this pass, about five miles from McIntyre, and the elevation of its source, as would appear from the observations taken by Prof. Emmons last year, is not far from three thousand feet above tide.

Following the course of the valley, under a most copious fall of rain, we descended to Lake Henderson, which is a fine sheet of water of two or three miles in length, with the high mountain of Santanoni rising from its borders, on the west and southwest. It is not many months since our woodsman, Cheney, with no other means of offence than his axe and pistol, followed and killed a large panther, on the western borders of this lake. Pursuing our course along the eastern margin of the lake, we arrived at the settlement about 3 P. M., having been absent on our mountain excursion seven days.

ELEVATION OF THE MOUNTAIN REGION.

The following table of observations, as also the preceding one, is calculated according to the formula given by Bowditch in his Navigator, except for the two principal mountain peaks, which are calculated by the formula and tables of M. Oltmanns, as found in the appendix to the Geological Manual of De la Beche, Philadelphia edition. For the points near lake Champlain, the height is deduced from the observations made at the lake shore, instead of those made at Albany, adding ninety feet for the height of lake Champlain above tide. The barometrical observations made at Syracuse, N. Y., at the same periods, by V. W. Smith, Esq., (with a well adjusted barometer, which has been compared with that of the writer,) would give to the High Peak an elevation of five thousand five hundred and ten feet. The observations at Albany have been taken for the lower station, because the latter place is less distant, and more nearly on the same meridian. Perhaps the mean of the two results may with propriety be adopted. In most of the other cases, the results deduced from the observations at Albany agree very nearly with the results obtained from the observations made at Syracuse.

Date.	Place of observation.	Hour	Upper station.—Barom. correct'd 1·50 for variation of cistern.		Lower station.—60 feet above tide at Albany		Corrected height in feet, above tide.
			Att. Th.	Barom.	Att. T	Barom.	
Aug. 3,	Lake Colden outlet, - - - - - -	5.30 P. M.	70°	27.00	74	29.78	2.851
Aug. 4,	Hudson River, above the Dyke Falls, - -	12.30 "	74	26.72	72	29.97	3.356
"	Do. in High Valley, E. of Mt. McMartin,	2.30 P. M.	72	26.37	73	29.96	3.711
"	Do. one third mile above camp, in the High Pass,	4.30. "	52	25.66	72	29.97	4.344
Aug. 5,	Head of the High Pass, source of the main branch of the Hudson and a fork of the east branch of the Au Sable,	8.40 A. M.	47	25.43	64	30.20	4.747
"	Summit of the High Peak of Essex, one and a quarter miles S. 70° W. from the source of the Hudson,	1 P. M.	47	24.83	69	30.24	5.467
Aug. 8,	Summit of Mount McIntyre, between Lake Colden and West branch of the Au Sable,	1.30 P. M.	60	25.11	73	30.14	5.183
Aug. 12,	Summit of Bald Peak,* on the west shore of Lake Champlain, seven miles N. 29° W. from Crown Point,	11 A. M.	65	27.99			2.065
"	Lake Champlain at Port Henry, - - -	4 P. M.	75	30.02			
	Do. corrected as for 11 A. M. - -	- -	73	30.03			

BALD PEAK, AND VIEW OF LAKE CHAMPLAIN.—ROUTES TO THE HEAD OF THE HUDSON.

Bald Peak is the principal eminence on the western shore of lake Champlain, about seven miles N. N. W. from Crown Point, and was ascended by the writer on our return to the lake. A good carriage road leads from East Moriah nearly to the foot of the peak, from whence the ascent by a footpath is not difficult, and may be accomplished even by ladies, without hazard. The summit commands a view of some of the principal peaks in the interior, among which the High Peak is conspicuous, bearing N. 80° West, by compass. The prospect of the prolonged basin of lake Champlain, which is obtained from this point, is well worth the trouble of the ascent, and is worthy the attention of tourists who can find it convenient to land either at Port Henry or Westport.

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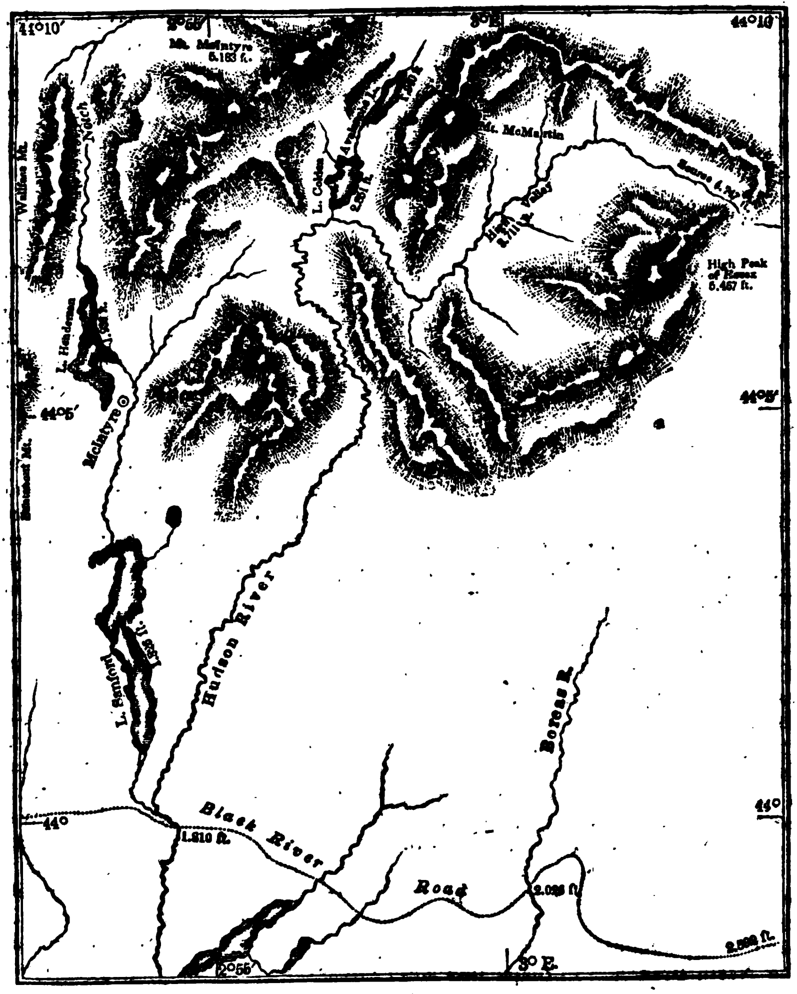
* 1974 feet above Lake Champlain.

The source of the Hudson and the High Peak of Essex, can be most conveniently reached from Johnson's, at Clear Pond, by a course N. 20° W.; or by landing at Westport, or Essex, and proceeding to the nearest settlement in Keene. By landing at Port Kent, and ascending the course of the Au Sable to the southeast part of Keene, and from thence to the Peak, the most interesting chain of waterfalls and mountain ravines that is to be found, perhaps, in the United States, may be visited. At Keene, Mr. Harvey Holt, an able woodsman, who was attached to our party, will cheerfully act as guide and assistant, in reaching the mountain. From the valley which lies southward of the peak, and near to the head waters of the Boreas and Au Sable, may be obtained, it is said, some of the best mountain views which this region affords. But travellers in these wilds, must be provided with their own means of subsistence, while absent from the settlement.



The above sketch must be considered only as an approach to correctness of topography, and is based in part upon the old survey lines, as found on the county map; but the geographical position is approximated to Burr's Map of the State of New York, by means of bearings from known objects on the borders of Lake Champlain.

MOUNTAINS OF NEW HAMPSHIRE.

The only point east of the Mississippi which is known to exceed this group of mountains in elevation, is the highest summit of the White mountains in New Hampshire; the elevation of which is given by Prof. Bigelow, from barometrical observations reduced by Prof. Farrar, at six thousand two hundred and twenty-five feet.* Prof. Bigelow adduces the observations of Capt. Partridge, made several years since, as giving an elevation of only six thousand one hundred and three feet. But the writer is indebted to Dr. Barratt for a memorandum of observations made by Capt. Partridge in August, 1821, which gives the height of the principal peaks of the New Hampshire group, as follows:—

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* New England Journal of Medicine and Surgery, Vol. V., p. 330.

Mount Washington,	above the	sea,	6.234 feet.
" Adams,	"	"	5.328
" Jefferson,	"	"	5.058
" Madison,	"	"	4.866
" Franklin,	"	"	4.711
" Monroe,	"	"	4.356

From this it appears most probable that there are a greater number of peaks in the Essex group that exceed five thousand feet, than in New Hampshire; although the honor of the highest peak is justly claimed by the latter.

IMPERFECT STATE OF GEOGRAPHICAL KNOWLEDGE—RESOURCES OF THE MOUNTAIN DISTRICT.

It appears unaccountable that the elevation of this region at the sources of the Hudson should have been, hitherto, so greatly underrated. Even Darby, in his admirable work on American geography, estimates the fall of the rivers which enter Lake Champlain from the west, as similar to those on the east, which he states to be from five hundred to one thousand feet.* The same writer also estimates the height of the table land from which the Hudson flows, at something more than one thousand feet!† The mountains of this region, appear to have almost escaped the notice of geographical writers, and in one of our best Gazetteers, that of Darby and Dwight, published in 1833, the elevation of the mountains in Essex county, is stated at one thousand two hundred feet. In Macauley's History of New York, published in Albany in 1829, there is however, an attempt to describe the mountains of the northern district of the state, by dividing them into six distinct ranges. This description is necessarily imperfect, as regards the central portion of the group; but this author appears to have more nearly appreciated the elevation of these mountains than any former writer. He states the elevation of Whiteface at only two thousand six hundred feet, and the highest part of the most westerly or Chateaugua range at three thousand feet. To the mountains near the highest source of the Hudson, including probably the High Peak, he has given the name of the Clinton range, and has estimated their elevation from six hundred, to two thousand feet!‡ He also describes the West Branch of the Hudson which rises near the eastern border of Herkimer county, as being the principal stream. The Northwest Branch, which unites with the main North Branch, a few miles below Lake Sanford, he describes as rising on the borders of Franklin and Essex counties and as pursuing a more extended course than the North Branch. Perhaps this description may be found correct, although information received from other sources does not seem to confirm the position.

It is understood that Prof. Emmons, in pursuing his geological explorations, has ascended another of the principal peaks situated easterly of the highest source of the Hudson, and made other observations which will be of value in settling the geography of this region. The professor finds the northern district of the state, to be one of great interest to the geologist, and although from the deficiencies of our maps, he is constrained to the performance of duties which pertain to the geographical, rather than to the geological department of science, yet all that can be accomplished in either branch, with the means placed at his disposal, may be confidently expected from his discriminating zeal and untiring perseverance.

Owing, perhaps, to the soda and lime which are constituents of the labradoritic rock, and its somewhat easy decomposition when exposed to the action of the elements, the soil of this region is quite favorable to the growth of the forests as well as the purposes of agriculture. The beds of iron ore which are found on the waters of the Hudson, at McIntyre, probably surpass in richness and extent, any that have been discovered in other countries. In future prospect, this may be considered as the Wales of the American continent, and with its natural resources duly improved, it will, at no distant period, sustain a numerous and hardy population.

New York, November 1, 1837.

OUR NATIONAL FLAG.

The Hon. Joel R. Poinsett, now Secretary of War, of the United States, related the following incident at a publick meeting in Charleston during the nullification controversy some years since:—

"Wherever I have been, (says Mr Poinsett,) I have been proud of being a citizen of this great republick, and in the remotest corners of the earth have walked erect and secure under that banner which our opponents would tear down and trample under foot. I was in Mexico when that city was taken by assault. The house of the American ambassador was then, as it ought to be, the refuge of the distressed and persecuted; it was pointed out to the infuriated soldiery as a place filled with their enemies. They rushed to the attack. My only defence was the flag of my country, and it was flung out at the instant that hundreds of muskets were levelled at us. Mr. Mason, (a braver man never stood by his friend in the hour of danger,) and myself placed ourselves beneath its waving folds, and the attack was suspended. We did not blench, for we felt strong in the protecting arm of this mighty republick. We told them that the flag that waved over us was the banner of that nation to whose example they owed their liberties, and to whose protection they were indebted for their safety. The scene changed as by enchantment, and those men who were on the point of attacking my house and massacring the inhabitants, cheered the flag of our country and placed sentinels to protect it from outrage. Fellow citizens, in such a moment as that, would it have been any protection to me and mine to have proclaimed myself a Carolinian? Should I have been here to tell you this tale if I had hung out the Palmetto and the single star? Be assured that to be respected abroad, we must maintain our place in the Union."

The human heart rises against oppression, and is soothed by gentleness, as the wave of the ocean rises in proportion to the violence of the winds, and sinks with the breeze into mildness and serenity.

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* Darby's View of the U. S. p. 242.

† Ib. p. 140.

‡ Macauley's History of New York, Vol. I. p. 2 to 9 and 20, 21, Albany, 1829.

INDIAN SUMMER—AMERICAN FORESTS, AND THE INFLUENCE OF THE GREAT LAKES ON OUR AUTUMN SUNSETS.

The beauty, blandness and mingled glories of a Western Indian Summer belong alike to earth and sky. In the valley of the great Lakes they are blent with a mellow richness and loveliness unknown in other climes. The spirits of beauty can worship in no temple more resplendent than the arched heavens lit up by an Autumn sunset, and burnished with flashes and crimson colourings, deepened by the many-teinted foliage of the primeval woods, mirrored and reflected from waters broad and bright as the Mediterraneans of the old world. The forest—pen nor pencil can do justice to the spectacle it presents, when the frost of a night has changed the lingering green of a summer. "It is as if a myriad of rainbows were laced through the tree-tops—as if the sunsets of a summer—gold, purple and crimson—had been fused in the alembick of the west, and poured back in a new deluge of light and colour over the wilderness. It is as if every leaf in those countless trees had been planted to outflush the tulip—as if, by some electrick miracle, the dies of the earth's heart had struck upward, and her crystals and ores, her sapphires, hyacinths and rubies, had led forth their imprisoned colours, to mount through the roots of the forest, and, like the angels that in olden time, entered the bodies of the dying, reanimate the perishing leaves, and revel an hour in their bravery."

A writer in a late number of the "Oasis" advances the plausible theory that the chain of lakes lying in a great circle from south of west to north, add much to the splendour of our Autumn sunsets. Rays of light falling on a reflecting surface, slide off, so to speak, in a corresponding angle of elevation or depression, whatever it may be. The writer considers the great American lakes as vast mirrors spread horizontally upon the earth, reflecting the rays of the sun that fall upon them according to the optical laws that govern this phenomenon. The higher the sun is above the horizon, the less distance the reflecting rays would have to pass through the atmosphere, and of course, the less would be the effect produced; while at or near the time of setting, the direct rays striking horizontally upon the waters, the direction of the reflecting rays must be so also, and therefore pass over or through the greatest possible amount of atmosphere previous to their final dispersion. Objects on the earth's surface, if near the reflecting body, require but little elevation to impress their irregularities on the reflected light. Any considerable eminences on the eastern shores of the great lakes would produce the effect of lessening or totally intercepting these rays at the moment the sun was in a position nearly or quite horizontal. The reflective power of a surface of water is much greater than that of earth, which accounts for the admitted superiour beauty and brilliancy of autumnal sunsets in the northern, over the most gorgeous in the southern states.

The views of this writer may be novel, yet his hints are worthy the attention of the curious. The succession of most resplendent sunsets for the past several weeks, when not destroyed by atmospherick derangement attending storms, the effulgence which continues to curtain the chambers of the day-king—with the frequent auroral ministers that attend his exit in this latitude, lead us to marvel, and reverence and worship the Power that spreads and gilds the bannery tent—displaying a handiwork man can only admire and enjoy, not imitate.

The theory of this writer accounts for the successive flushes of golden and scarlet light so often observed to rise and blend and deepen in the west as the sun approaches the horizon, and sink below it, by the supposition that each lake, one after the other, lends its reflecting light to the visible portion of the atmosphere, and thus as one fades, another flings its mass of radiance across the heavens, and acting on a medium prepared for its reception, prolongs the splendid phenomena. He says:—

"We have for years noticed these appearances, and marked the fact, that in the early part of September, the sunsets are of unusual brilliancy, and more prolonged, than at other times. They are at this season, immediately after the sun goes down, accompanied by pencils or streamers of the richest light, which, diverging from the position of the sun, appear above the horizon, and are sometimes so well defined that they can be distinctly traced to the zenith. At other seasons of the year, clouds just below the horizon at sunset produce a somewhat similar result in the formation of brushes of light; and elevated ranges of mountains by intercepting and dividing the rays, whether direct or reflected, effect the same appearances; but in this case there are no elevated mountains, and on the finest of these evenings the sky is perfectly cloudless. The uniformity of these pencils at the same season for a great number of years, prove the permanency of their cause, and lead us to trace their origin to the peculiar configuration of the country bordering on the great lakes.

"At the time of the year these streamers are the most distinct, a line drawn from this point (Oswego) to the sun would pass over a small part of the west end of Lake Ontario, the greatest diameter of Lake Huron, and across a considerable portion of Lake Superiour. From considerations connected with the figure of the earth, and the relative position of the sun and the lakes, with the hills that border Lake Huron on the east, it appears clear to us that the broken line of these hills acts the part of clouds or mountains in other circumstances in intercepting and dividing into pencils the broad mass of light reflected from the Huron, and thus creating those splendid streamers, by which, as it were, the commencement of autumn is marked. As the sun still advances to the south, the pencils formed by the highlands are lost to us, but in their place come two broad ones, caused by the feebler reflective powers of the isthmuses that separate St. Clair from the Huron, and the former from Lake Erie. This occurs not far from the middle of September, when the sun sets a few degrees north of west, and can be observed nearly a month. These interruptions of the brilliance of the west are not, however, of the duration of those effected by the hills, as the sun has scarcely time to leave the surface of the Huron before these pencils and breaks are all abruptly melted into the rich dark crimson that floats up from the Michigan or the mighty Superiour.

"After the southern declination of the sun has become such that the Huron range of hills is to the northward of the range of light reflected to us, these pencils disappear from the heavens apparently, and do not return until, with another season, and a renewed atmosphere, the sun is found in the same position. The reason of this is, the whole of the Michigan peninsula is so level that it does not break the reflected light from that lake; and the broader ones made by breaks in the chain of lakes from Erie to Huron, are not of a nature to be so distinctly marked as those produced by the interception of rays by hills or clouds.

"We have thrown out these hints—for we consider them nothing more—in the hope of directing the notice of other and more competent observers to the facts stated, and if possible, thereby gaining a satisfactory explanation of the splendid phenomena connected with our autumnal sunsets, should the above not be considered as such."

The favourable location of our city, overlooking as it does a broad expanse of waters on the north and west, often gives it the famed rose-coloured skies of impassioned Italy. At such an hour the divinity is stirred within us, and few can go out under the pavilion nature has spread over our forest, city, and Erie, without feeling that "God alone is to be seen in heaven." The breathings of the sweetest of American bards then come unbidden from the fount of memory:—

> "Oh! what a glory doth this world put on
> For him that with a fervent heart goes forth
> Under the bright and glorious sky, and looks
> On duties well performed and days well spent!
> For him the wind, ay, and the yellow leaves,
> Shall have a voice, and give him eloquent teachings.
> He shall so hear the solemn hymn that Death
> Has lighted up for all, that he shall go
> To his long resting-place without a tear."

[Cleveland Herald.

RIVERS IN MISSISSIPPI.

The principal streams of the state of Mississippi are as follow:—

Pearl river, which heads near the Choctaw county line, and has a course of about seven hundred miles, till its waters mingle with those of the Gulf of Mexico. Steamboats can ascend it five hundred and eighty miles to Pensacola, on its west bank, in Leake county, four miles southwest of Carthage. The greatest impediments to its navigation are in the first hundred miles above its mouth. One point of it, in Madison county, is only thirteen miles from the Big Black, and about thirty-five from the Yazoo. Its principal tributaries are the Lobutcha, Yukainokhina and the Bogue Chitto from the west, and Strong river from the east. Yukainokhina has been ascended some miles by keels.

Yazoo river may be considered as heading near Pontotock. The stream sweeps round, and receiving the Cold Water from the west, and the Tallatoba from the east, flows on under the name of Tallahatchie, till its junction with the Yalobusha from the left; when the united stream assumes the name of Yazoo. Near the Holmes county line, there are two channels at high water. That on the left, which is about seventy miles long, is known by the name of Little river; part of which is also called Chula lake. The island formed is called Honey island, d is very fertile. Descending further, a few miles below Satartia, in Yazoo county, the Sun Flower—two hundred miles long, and navigable for steamboats—puts in from the right, or Washington county side. Within fifteen miles of its mouth, it receives Deer creek from the right, and finally, after a course of seven hundred miles, empties into the Mississippi, twelve miles above the flourishing city of Vicksburgh. From one point of the Yazoo, known as the Chickasaw bayou, it is only seven miles through for skiffs, in high water, to Vicksburgh: while it is thirty round.

Steamboats have ascended the *Yalobusha* forty miles.

The *Yoccony Patawfa*—two hundred miles long—is also a branch of the Tallahatchie.

From the confluence of the Cold Water to the mouth of the Yazoo and westward to the Mississippi, the country is entirely alluvial, no part of it being more than thirteen feet above overflow. Here, doubtless, the ocean once dashed its wave, and held dominion till the Mississippi, slowly, but not less surely, compelled it to retire.

The *Yazoo Pass* puts out from the Mississippi ten miles below Helena, and after twenty-five miles joins the Cold Water, or Oka Kapussa, and thus communicates with the Yazoo. By this route, which is longer than the main channel, you reach the Mississippi by a genuine current, in five hundred miles, through which many boats have descended. Efforts are now making to clear the pass of obstructions to its navigation; but the appropriation of ten thousand dollars is inadequate. The summit level on both sides of the breadth of a thousand yards should be dyked for some miles.

The *Yazoo* is from one hundred to two hundred yards broad. At and near its mouth, it is called Old river; because it was the bed of the Mississippi one hundred and fifty years ago. It is there a mile in width or more. At Liverpool, twenty miles below Manchester, the Yazoo is within seven miles of the Big Black.

Steamboats may ascend the Yazoo four hundred miles or more.

Deer Creek is nowhere more than from fifteen to twenty miles from the Mississippi. It has been ascended in skiffs nearly to its source. It communicates with the Sun Flower, by the Rolling Forks, and it is usual to ascend the Sun Flower in order to reach the plantations on Deer Creek, or to pass over to the Mississippi.

Big Black rises in Choctaw county, and after a course of five hundred miles, enters the Mississippi one mile and a half above the city of Grand Gulf, in the county of Claiborne. It receives not a single tributary of importance. Its width at low water exceeds one hundred yards in very few places; but, during floods, it is a mile or more in width. Steamboats may ascend it more than three hundred miles. As you ascend, after leaving the county of Claiborne, it intervenes between the counties of Hindes and Madison on the south, and those of Yazoo and Holmes on the north. About thirty thousand bales of cotton annually descend this river.

The *Tombigby* is only partly—say two hundred and fifty miles—within the state of Mississippi. Between townships sixteen and seventeen north of the basis of townships of the Choctaw district, or in latitude thirty-three degrees, fifteen minutes, it passes into the state of Alabama, and flows on to join the stream of that name. It divides the counties of Monroe and Lowndes nearly centrally. It has been navigated by steamboats, within our state, one hundred miles or more, to Cotton-Gin-Port, ninety miles above Columbus, and six hundred from the gulf of Mexico; from whence, to its source, it is about seven hundred and fifty miles.

The *Oktibbeha* is a branch of the Bigby, as it is familiarly called, and enters it from the west, four miles above Columbus. It may be navigated twenty miles, to Mahew.

Noxubee river, which gives its name to a county, is another branch, one hundred and thirty miles long, and rises in our state.

Pascagoula river disembogues into the gulf of Mexico. It is formed by the union of the Chickasawhay from the north, and Leaf river from the northwest. Its length, following the Chickasawhay, is about four hundred miles; of which
dred miles or more may be navigated.

Homochitto river rises in the county of C
few miles south westerly of Gallatin, and
course of three hundred miles, enters the M
pi above Fort Adams. It has been ascer
hundred miles.

DESTRUCTION OF THE JANIZARIES BY
MOUD II.

The destruction of the Janizaries will
considered as one of the most memorable e
the history of the reign of the Sultan Mah
portrait of whom is given below. The Ja
were a famous military body; the name
ing, *new soldiers;* it was created by the E

[The Sultan, Mahmoud II.]

Orcan, about the middle of the fourteenth century, and was regularly organized by his successor, Amurath I.

The corps of Janizaries, like that of the Egyptian Mamelukes, was at first recruited exclusively from young Christian captives; afterward, however, native born Turks were admitted. As the pay of the corps was large, and as it possessed great advantages and exorbitant privileges, recruits were seldom wanted, and the corps was divided into those who were in actual service, and those who were called upon in case of war; the latter received no pay, but were entitled to all other privileges. At the time of its destruction, this body was composed of one hundred and ninety-seven *ortas* or legions, of one thousand men each.

Having contributed actively to the aggrandizement of the Turkish empire, the Janizaries, like most purely military bodies, the Pretorians of Rome, the Strelitz of Russia, and the Mamelukes of Egypt, became a formidable body; they made emperours and displaced them. Many sultans had attempted to destroy this dangerous institution, or to neutralize its influence by enrolling new troops. From the commencement of the eighteenth century, two emperours, Selim III. and Mustapha IV., had paid for their attempts, by the loss of throne and life. Mahmoud II., the cousin of one and brother of the other, who had obtained the imperial purple through a revolt, determined to accomplish this enterprise or to perish with them. For fifteen years he plotted against these Janizaries, who being naturally enemies of all innovations, had remained stationary while all Europe was advancing in civilization.

Mahmoud, who by his conduct had gained the respect and affection of the Ottoman people, had already acquired the moral elements of success; and by organizing small troops of artillery devoted to himself and hostile to the Janizaries, had also prepared the material for triumphing by force. At the end of May, 1826, it was determined in council that a military reform was necessary for the safety of the Ottoman race, and it was decided that the Janizaries should furnish their contingent of the new troops. At first, the military received this resolution with coldness, but when it was attempted to enforce the order, they mutinied, and on the 14th of June, in the evening, they were in full revolt. They ravaged Constantinople, pillaged and burned several of the publick buildings, and the next day assembled on the square of the Atmeidan. The government however was ready; the most energetick measures were determined upon. The sacred standard of the Prophet was displayed at the mosque of Achmet, and every faithful Mussulman was commanded to take arms, and to rally under this banner. The sultan placed himself at the head of the male population of the capital, and the Janizaries were then summoned to come under the sacred standard. They refused; the mufti then declared that the law had ceased to protect them, and the sultan added that their lives were forfeited. They were now attacked by a furious people, and by the regular troops. The Janizaries presented no resistance; they stood as it were in a stupor, and perished by fire and sword. The gates of the city had been closed so that there was no escape. Several thousand persons were taken, some of whom were liberated, while those who were told to "*go and consult the mufti,*" were strangled by the executioners. More than eight thousand Janizaries perished in Constantinople alone. A large number were executed in the provinces; many were banished to Asia, and the rest were disarmed and mingled with the population.

On the 17th of June, the body of Janizaries was dissolved by a decree: the term was declared infamous, and their memory was execrated. Thus perished at one blow, a body of military, formidable for its power, and which had existed for more than four hundred years.

Mahmoud II., is the son of the emperour Abdul Hamid, who died in 1789; his mind is highly cultivated, and he speaks and writes with eloquence; his external appearance, however, is by no means remarkable, and the semi-European costume which he has adopted, deprives him of the advantage of the oriental dress; his manners, however, are affable, dignified, and sometimes imposing.

PROFESSOR MORSE'S ELECTRO-MAGNETICK TELEGRAPH.

It is with some degree of pride, that it falls to our lot first to announce the complete success of this wonderful piece of mechanism, and no place could have been found more suitable to pursue the course of experiments necessary to perfecting the detail of machinery than the Speedwell Works. Replete as they are with every convenience, Professor Morse quietly pursued the great object, and has finally succeeded. Others may have suggested the possibility of conveying intelligence by electricity, but this is the first instance of its actual transmission and permanent accord.

The telegraph consists of four parts:

1st. The *battery*—A Cruikshank's galvanick trough of sixty pair of plates, seven by eight and a half inches each. 2d. The *portrule*—An instrument which regulates the motion of the rule. The rule answers to the *stick* of the printers, and in it the *type* representing the numbers to be transmitted are passed beneath the lever which closes and breaks the circuit. 3d. The *register*—An instrument which receives and records the numbers sent by the portrule from any distant station. 4th. A *dictionary*, containing a complete vocabulary of all the words in the English language regularly numbered.

The communication which we saw made through a distance of two miles was the following sentence: "*Railroad-cars just arrived*, 345 *passengers*. These words were put into numbers from the dictionary; the numbers were set up in the telegraphick type in about the same time ordinarily occupied in setting up the same in a printing office. They were then all passed complete by the portrule in about half a minute, each stroke of the lever of the portrule at one extremity marking on the register at the other, a distance of two miles instantaneously. We watched the spark at one end, and the mark of the pencil at the other, and they were as simultaneous as if the lever itself had struck the mark. The marks or numbers were easily legible, and by means of the dictionary were resolved again into words.

The superiority of this telegraph over all hitherto invented is, that day or night, in clear or in foggy weather, intelligence can be sent instantaneously. The advantages to the government and the country of such a means of communication are incalculable.

Morristown Jerseyman.

SPECIMENS OF ANCIENT LOVE-LETTERS.

[From a Boston paper.]

Between the first Governour of Massachusetts and his Wife, about the year 1628.

"My most sweet Husband.—How dearly welcome thy kind letter was to me, I am not able to express. The sweetness of it did much refresh me. What can be more pleasing to a wife, than to hear of the welfare of her best beloved, and how he is pleased with her poor endeavours! I blush to hear myself commended, knowing my own wants. But it is your love that conceives the best, and makes all things seem better than they are. I wish that I may be always pleasing to thee, and that those comforts we have in each other may be daily increased, as far as they may be pleasing to God. I will use that speech to thee, that Abigail did to David; 'I will be a servant to wash the feet of my lord.' I will do any service wherein I may please my good husband. I confess I cannot do enough for thee; but thou art pleased to accept the will for the deed, and rest contented.

"I have many reasons to make me love thee, whereof I will name two: first, because thou lovest God; and secondly, because thou lovest me. If these two were wanting, all the rest would be eclipsed. But I must leave this discourse, and go about my household affairs. I am a bad housewife to be so long from them; but I must needs borrow a little time to talk with thee, my sweetheart. I hope thy business draws to an end. It will be but two or three weeks before I see thee, though they be long ones. God will bring us together in his good time; for which I shall pray.

"Farewell my good husband; the Lord keep thee.

"Your obedient wife,

"Margaret Winthrop."

"My good Wife.—Although I wrote to thee last week, yet, having so fit opportunity, I must needs write to thee again; for I do esteem one little, sweet, short letter of thine, (such as the last was,) to be well worthy two or three from me.

"I began this letter yesterday at two o'clock, thinking to have been large, but was so taken up by company and business, as I could get but hither by this morning. It grieves me that I have not liberty to make better expression of my love to thee, who art more dear to me than all earthly things; but I will endeavour that my prayers may supply the defect of my pen, which will be of use to us both, inasmuch as the favour and blessing of God are better than all things besides.

"I know thou lookest for troubles here, and when one affliction is over, to meet with another; but remember our Saviour tells us, 'Be of good comfort; I have overcome the world.' Therefore, my sweet wife, raise up thy heart, and be not dismayed at the crosses thou meetest with in family affairs or otherwise; but still fly to Him who will take up thy burden for thee. Go thou on cheerfully, in obedience to his holy will, in the course he hath set thee. Peace shall come. I commend thee and all thine to the greacious protection and blessing of the Lord.

"Farewell, my good wife. I kiss and love thee with the kindest affection, and rest

"Thy faithful husband,

"John Winthrop."

"Most loving and good Husband.—I have received your letters. The true tokens of your love and care of my good, now in your absence, as well as when you are present, make me think that saying false, 'Out of sight, out of mind.' I am sure my heart and thoughts are always near you, to 'do you good, and not evil, all the days of my life.' I rejoise in the expectation of our happy meeting; for thy absence has been very long in my conceit, and thy presence much desired. Thy welcome is always ready; make haste to entertain it.

"And so I bid my good husband farewell, and commit him to the Lord.

"Your loving and obedient wife,

"Margaret Winthrop.

PRINCIPAL EVENTS OF 1837.

[From the New Yorker.]

Jan. 3. Wreck of the ship Mexico, of New York—108 lives lost.
15. Great fire at St. John, New Brunswick. Loss $1,000,000
30. Jaffa, in Palestine, destroyed by an earthquake, and 13,000 inhabitants buried beneath the ruins.
Feb. 9. Votes for President counted at Washington—Martin Van Buren declared elected.—No choice for Vice President: Richard M. Johnson elected by the Senate—33 to 16.
22. English ship Jane and Margaret for New York, wrecked on the Isle of Man—206 lives lost.
Mar. 1. Resolution in favour of recognising the Independence of Texas passed the U. S. Senate, by a vote of 23 to 19.
4. Martin Van Buren and Richard M. Johnson inaugurated.
6. Treaty with the Florida Indians concluded by Gen. Jessup.
15. The Queen's English and Spanish forces under Evans defeated by the Carlists near St. Sebastian: loss 1000.
31. The President of Mexico protests against the recognition of Texas.
Apr. 3. Great snow-storm at St. Louis, snow deeper than ever known.

Apr. 8. Great fire at New Orleans—107 houses destroyed.
11. Snow in England and France—season backward everywhere.
17. Mexican brig-of-war, captured by U. S. sloop-of-war Natches.
27. Fire in Detroit—70 buildings and much property destroyed.
May. 4. Agricultural Bank of Mississippi suspends specie payment.
9. Steamboat Ben Sherrod burnt on the Mississippi—175 lives lost.
10. New York city Banks suspend specie payments, followed by general suspension. The heavy failures in this city alone, for two months preceding, had exceeded 300; in Boston, 78.
15. The President calls an extra session of Congress.—Sept. 4.
16. Bank suspension authorized by the New York Legislature.
17. Advantages gained by the Queen's troops in Spain.
19. War declared by Buenos Ayres against Peru.
June 3. Queen's troops under Gen. Oraa defeated by the Carlists.
— Destructive tornado in Dutchess county, &c.
10. Plague ravages Smyrna—300 deaths daily.
11. Riot between firemen and Irishmen in Boston.
15. Disastrous inundation at Baltimore—25 lives lost.
20. Death of William IV. of England, after a reign of six years.
21. Victoria, daughter of the Duke of Kent, proclaimed Queen, aged 18.
July 4. Cholera at Naples, carrying off 400 daily; since April, 12,000. Rages also at Palermo and throughout the south of Italy.
19. Railroad from Baltimore to Wilmington formally opened.
21. Political commotion in Mexico.
Aug. 2. Great hurricane in the West Indies for several days.
11. Cars run against each other on Norfolk Railroad—3 killed.
14. Fire at Washington, Ga.—30 buildings destroyed.
15. Steamboat Du Buque exploded above St. Louis: 26 lives lost.
21. Office of the Abolition Observer at Alton destroyed by a mob.
Oct. 9. Treasury Note Bill passed by the House: yeas 123, nays 98.
— Loss of steampacket Home, from New York to Charleston, off Cape Hatteras, with 95 lives: only 40 saved.
— Constantine in Algiers captured by the French—General Damremont killed.
Nov. 7. Riot at Alton: Abolition press destroyed; Rev. E. P. Lovejoy and Mr. Bishop shot dead.
16. Troubles in Canada: Radicals arrested—several of their leaders rescued—arms first appealed to.
25. Affair of St. Charles—insurgents defeated.
Dec. 4. XXVth Congress reassembles for its first regular session.
5. President Van Buren's Annual Message delivered.
10. Insurrection in Upper Canada—attack on Toronto by the Radicals, headed by M'Kenzie—repulsed.

UNITED STATES CALENDAR—1838.

CHIEF EXECUTIVE OFFICERS.

			Salary.
MARTIN VAN BUREN	New York	President	$25,000
RICHARD M. JOHNSON	Kentucky	Vice-President	5,000

CABINET.

John Forsyth	Georgia	Secretary of State	6,000
Levi Woodbury	N. Hampshire	Sec'y of Treasury	6,000
Joel R. Poinsett	South Carolina	Secretary of War	6,000
Mahlon Dickerson	New Jersey	Secretary of Navy	6,000
Amos Kendall	Kentucky	Postmaster-Gen'l	6,000
Benjamin F. Butler	New York	Attorney-General	4,000

SUPREME COURT.

			Appointed.	
ROGER B. TANEY	Baltimore, Md.	Chief Justice	1836	5,000
Joseph Story	Cambridge, Ms.	Asso. Jus'ce	1811	4,500
Smith Thompson	New York city	do.	1823	4,500
John McLean	Cincinnati, O.	do.	1829	4,500
Henry Baldwin	Pittsburg, Pa.	do.	1830	4,500
James M. Wayne	Savannah, Ga.	do.	1835	4,500
Philip P. Barbour	Gordonsville, Va.	do.	1836	4,500
John McKinley	Florence, Ala.	do.	1837	4,500
John Catron	Nashville, Ten.	do.	1837	4,500

Officers.—B. F. Butler, Attorney-General; Richard Peters, Reporter; Wm. T. Carrol, Clerk. Session annually, commencing the second Monday in January.

MINISTERS PLENIPOTENTIARY.

			Salary.
Andrew Stevenson, Va.	England, London	1836	$9,000
Lewis Cass, Ohio	France, Paris	1836	9,000
John H. Eaton,	Spain, Madrid	1836	9,000
George M. Dallas, Pa.	Russia, St. Petersburgh	1837	9,000
Henry Wheaton, R. I.	Prussia, Berlin	1837	9,000
Powhatan Ellis, Miss.	Mexico, Mexico	1837	9,000

Charges d'Affaires.—Edward Kavanagh, Portugal; Auguste Davezac, Holland; Virgil Maxey, Belgium; Christopher Hughes, Sweden; J. F. Woodside, Denmark; David Porter, Turkey; R. B. McAfee, New Grenada; J. G. A. Williamson, Venezuela; William Hunter, Brazil; Charles G. De Witt, Central America; Richard Pollard, Chili; James B. Thornton, Peru; Alcee La Branche, Texas.

OTHER CHIEF OFFICERS.

James K. Polk, Speaker of the House of Representatives.
Alexander Macomb, Major-General and General-in-Chief, Washington.
Edward P. Gaines, Brigadier-General West Division, Jefferson Barracks, Mo.
Winfield Scott, Brig.-Gen. Eastern Division, Elizabethtown, N. J.

Isaac Chauncey,	Pres't. of Board Navy Commissioners	3,500
Charles Morris	Associate Members of do.	3,500
A. S. Wadsworth		3,500
John Campbell	Treasurer	3,000
Thomas L. Smith	Register	3,000
Aaron S. Dayton	Chief Clerk in State Department	2,000
M'Clintock Young	do. Treasury do.	2,000
J. A. Cochran	do. War do.	2,000
John Boyle	do. Navy do.	2,000
George Wolfe	First Comptroller of the Treasury	3,500
Albion K. Parris	Second do. do.	3,000
Jesse Miller	First Auditor do.	3,000
Wm. B. Lewis	Second do. do.	3,000
Peter Hagner	Third do. do.	3,000
J. C. Pickett	Fourth do. do.	3,000
S. Pleasonton	Fifth do. do.	3,000
Henry D. Gilpin	Solicitor	3,000
Charles K. Gardner	Auditor of the Postoffice	3,000
Selah R. Hobbie	First Assistant Postmaster-General	2,500
Robert Johnson	Second do. do.	2,500
Daniel Coleman	Third do. do.	2,500
Henry L. Ellsworth	Commissioner of the Patent Office	3,000
J. S. Whitcomb	Com'sary-Gen'l of the Land Office	3,000
Matthew Burchard	Solicitor of the Land Office	2,000

FOREIGN AMBASSADORS EXTRAORDINARY, RESIDING AT WASHINGTON.

Henry S. Fox	Great Britain	C. Bankhead	Sec. Legation.
M. Edouard Pontois	France	M. Saligny	do.
Baron de Maltitz	Russia	G. Krehmer	do.
Don Angel C. de la Barca	Spain	Don M. Tacon	do.
Don Francisc[illegible]artinez	Mexico		
W. W. Wharton, M. Hunt	Texas		

POPULATION OF THE UNITED STATES AT DIFFERENT PERIODS.

	1790.	1800.	1810.	1820.	1830.
Total	3,429,827	5,305,925	7,239,814	9,698,131	12,866,920
Slaves	697,897	893,64	1,191,360	1,538,064	2,009,031

GOVERNOURS OF THE STATES—1838.

States.	Governours.	Term.	Expires.	Salary.
Maine	Edward Kent	1 year	Jan. '39	$1,500
N. Hampshire	Isaac Hill	1 "	June, '38	1,000
Vermont	Silas H. Jenison	1 "	Oct. '38	750
Massachusetts	Edward Everett	1 "	Jan. '39	3,666
Rhode Island	John Brown Francis	1 "	May, '38	400
Connecticut	Henry W. Edwards	1 "	May, '38	1,100
New York	William L. Marcy	2 "	Jan. '39	4,000
New Jersey	William Pennington	1 "	Oct. '38	2,000
Pennsylvania	Joseph Ritner	3 "	Dec. '38	4,000
Delaware	Cornelius P. Comegys	4 "	Jan. '41	1,333
Maryland	Thomas W. Veazey	1 "	Jan. '39	2,666
Virginia	David Campbell	3 "	Mar. '40	3,333
North Carolina	Edward B. Dudley	2 "	Jan. '39	2,000
South Carolina	Pierce M. Butler	2 "	Dec. '38	3,500
Georgia	George R. Gilmer	2 "	Nov. '39	3,000
Alabama	Arthur P. Bagby	2 "	Nov. '39	3,500
Mississippi	Alexander G. McNutt	2 "	Jan. '40	2,500
Louisiana	Edward D. White	4 "	Jan. '39	7,500
Ohio	Joseph Vance	2 "	Dec. '38	1,000
Kentucky	James Clark	4 "	Sept. '40	2,500
Tennessee	Newton Cannon	2 "	Oct. '39	2,000
Indiana	David Wallace	3 "	Dec. '40	1,500
Illinois	Joseph Duncan	4 "	Dec. '38	1,000
Missouri	Lilburn W. Boggs	4 "	Nov. '40	1,500
Michigan	Stevens T. Mason	2 "	Jan. '40	2,000
Arkansas	James S. Conway	4 "	Nov. '40	2,000
Territories.—Florida	Gen. Richard K. Call			2,500
Wisconsin	Gen. Henry Dodge			2,500

PIZARRO.

ASSASSINATION OF FRANCIS PIZARRO.

The most valuable acquisition made by Pizarro after the death of Almagro, was the conquest of the province of Charcas, in which were the rich mines of Potosi, which the marquis divided among the conquerors, having first founded the city of La Plata, so called from its being situated among the mines. His brother Gonzalo, then engaged in subduing the Inca Manco, and his brother Ferdinand, at that time a prisoner in Spain, had also shares in the riches of this province.

Gonzalo having driven the Inca to the mountains, and becoming governour of Quito, turned his thoughts to the making new discoveries; for which purpose he marched to the eastward, in order, if possible, to obtain some knowledge of the breadth of America; and though he met with such insuperable obstacles as obliged him to return to Quito, yet Orellana, one of his officers, sailed down the great river of the Amazons, returning from the mouth of it to the Spanish settlements, on the other side of the American continent, and thereby opening a passage to countries before unknown, though not less valuable than those already discovered.

The marquis of Pizarro now employed himself in securing and establishing his authority, by methods not less cruel than impolitick; for he not only discharged all the officers whom he suspected of having had any regard for Almagro, but conscious of his own injustice, and fearing the consequence of their complaining against him, took measures to prevent their returning to Spain: by which means many of them being involved in great distress, were reduced to the necessity of living upon the alms of their countrymen: and twelve of them, all men of family, lived together in a house given them by one de la Presa, having but one cloak among them all, which they wore by turns, only one of them going out at a time: but de la Presa dying, Pizarro turned them out of the house, and at the same time published an edict by which, under the severest penalties, he forbade any one to afford them or their adherents the least relief.

This proceeding rendering them desperate, was more fatal to Pizarro than possibly their other distresses might ever have been; for seeing no end to their miseries, but by their own or the marquis's destruction, they resolved on the latter.

The bravest of Almagro's friends, among whom were the distressed veterans abovementioned, repaired to Lima, two or three at a time, where they did not want friends, who concealed them in their houses, till their number exceeded two hundred. These determined to seize the first fair opportunity of executing their design, in which, however, they were for some time retarded, in hopes that a new commissioner, some of whose attendants were already arrived, would come from Spain, in order to take cognizance of the marquis's conduct; and that he would do them justice, without laying them under the necessity of raising an insurrection.

But on Sunday, the twenty-sixth of June, 1541, De Rada, one of the principal conspirators, had private intelligence that they were discovered, and that the marquis was taking measures to have them all put to an ignominious death in less than three hours. This information he hastily communicated to such of the conspirators as he could most readily meet with; on which, finding there was no time to be lost, they repaired, one by one, to the number of nineteen, to the house of young Almagro, which stood on one side of the great square, from whence they marched with drawn swords through the market-place toward the marquis's palace, crying out, "Long live the king, but let the tyrant die!" And it is remarkable that though there were at the same time above a thousand people in the square, they met with no opposition, nor did Pizarro receive the least intelligence of their rising; so that they entered the palace very easily, the doors being open.

When the first news of the disturbance was brought, Pizarro, who was setting with only two or three of his people, ordered Francis de Chaves, his lieutenant-general, to secure the great door, which he neglected to do, on a supposition that it was only some disturbance among the soldiers, which his presence would easily quell; so that going forward, he met the conspirators on the great staircase, and demanding the reason of those commotions, was answered by two or three of them lodging their daggers in his bosom, on which he instantly dropped down dead.

The marquis, hearing them in the gallery, had no time to put on his armour, but seizing his sword and buckler, defended the door of his apartment very resolutely for a considerable time, supported only by his half-brother Don Francis de Alcantara, and two of his pages; the rest of his company and servants having fled at the beginning of the insurrection. At length one of the conspirators pressing home, bore down and killed Don Francis, on which the rest advancing with fresh vigour, the marquis retired before them, and at last sunk down, fainting with loss of blood, and was soon despatched; while his two pages, having desperately wounded several of the conspirators, expired by his side, gallantly fighting in his defence.

Thus fell Don Francis Pizarro the first discoverer and conqueror of Peru, in the sixty-fifth year of his age. His body, by young Almagro's permission, was privately buried by his servants, no person of any consequence presuming to attend the funeral, lest they should give offence to the prevailing party.

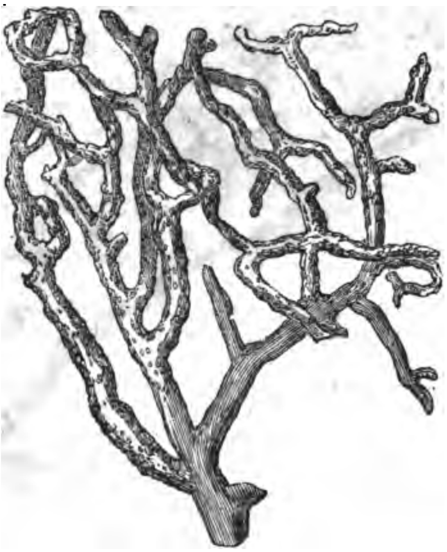
The meanness of Pizarro's education was publickly known from his not being able to write his own name, which his secretary used to insert between two strokes which he drew with a pen.

He was endowed by nature with some good qualities, the most remarkable of which was his bravery; but his ambition was boundless, he never scrupled to sacrifice his honour to his interest; made a jest of the most sacred obligations, and was dead to all the tender feelings of humanity.

His fate in some measure resembled that of Almagro; like him he fell a victim to ambition; like him he died a violent death; and like him he was obscurely buried after a life of splendour; but he possessed not the fiftieth part of Almagro's virtues.

Pizarro was never married, but he had several mistresses, some of whom were daughters and sisters of the Incas; but we do not find that he left any children behind him.

NATURAL HISTORY



THE CORAL.

The red coral (*Isi nobilis,*) is so well known as a material from which numberless elegancies of life are formed, that a particular description of it were needless. In all ages and in all countries mankind have acknowledged its beauty. Warriours have employed it in the ornamenting of their weapons; men and women in the decoration of their persons and houses; the physicians of the middle ages looked upon it as a universal remedy; and the priests of ancient religious sects esteemed it as an object acceptable to the gods.

Its natural figure is tree-like; it is inarticulated, the axis stony, stiff, and susceptible of the highest polish; the rind is fleshy, becoming chalky and very friable by desiccation, and always adhering to the axis; this is equal to marble in solidity, which, being formed of concentrick layers, they become perceptible by calcination; its surface is more or less striated; the striæ parallel and unequal in depth.

A reticulated body, formed of small membranes, with numberless vessels and glands filled with a milky juice, appears to unite the rind with the centre. This reticulated body is found in all corticiferous *Polypidoms;* the rind is of a less deep colour, of a soft substance, and formed of small membranes and slender filaments; it is pierced by tubes or vessels, and covered with tubercles, which are thinly scattered and have a large base, the summit of which is terminated by an opening divided into eight parts. In the interiour is found a cavity which contains a white and almost transparent polypus, its mouth surrounded by eight conical tentacula slightly compressed, and ciliated on their borders.

This coral is found in different parts of the Mediterranean and Red seas; it grows in all directions, and each trunk forms a perpendicular to the level from whence it springs; it attaches itself to all rocks, whatever may be their nature; it is also found on unfixed bodies, such as fragments of lava, stone vases, broken glass, and specimens have been exhibited in museums adhering to a variety of bodies.

When coral is once detached, and at the mercy of the waves, it soon loses it polypiferous rind; to enable the constructors of this brilliant edifice to labour for its increase, it is indispensable that it should be fixed; their work does not, however, advance with a rapidity equal to that of the madreporick *Polypi* in the Indian sea, or the immense Eastern ocean, whose labours, in the short space of a few years, close the entrance of marine ports, and raise those gigantick reefs so well known to navigators, on which many vessels, sailing in those distant regions, have struck and perished.

Coral is found at different depths in the bosom of the waters, but, notwithstanding the density of the medium in which it exists, all aspects are not suitable to its increase. On the coasts of France it covers those rocks that face the south; it is rarely met with on those having an eastern or western aspect, and never in a northern one. It is never found at less than three or four yards below the surface of the sea, nor ever at a greater depth than three hundred and fifty yards.

In the straits of Messina coral prefers an eastern aspect, on the south it is seldom found, and still less on the rocks of the north or west. They there fish it from a depth of one hundred to two hundred yards. In those straits, immortalized by Homer and Virgil, the solar rays strike more perpendicularly than on the coast of France, their heat penetrates to a greater distance, and the coral is found even deeper than three hundred yards; but then its quality no longer compensates for the risks and numerous difficulties attending the procuring of it.

On the north coast of Africa it is not sought beyond thirty or forty yards in depth, and at a distance of three or four leagues from shore; they abandon it when it reaches two hundred and fifty or three hundred yards.

The coral is generally of a more beautiful colour in shallow waters which easily admit the light, than where the immense column of water, by absorbing all the luminous rays, deprives it of the energetick influence exerted over all animated beings by that beneficent medium unceasingly emanating from the sun.

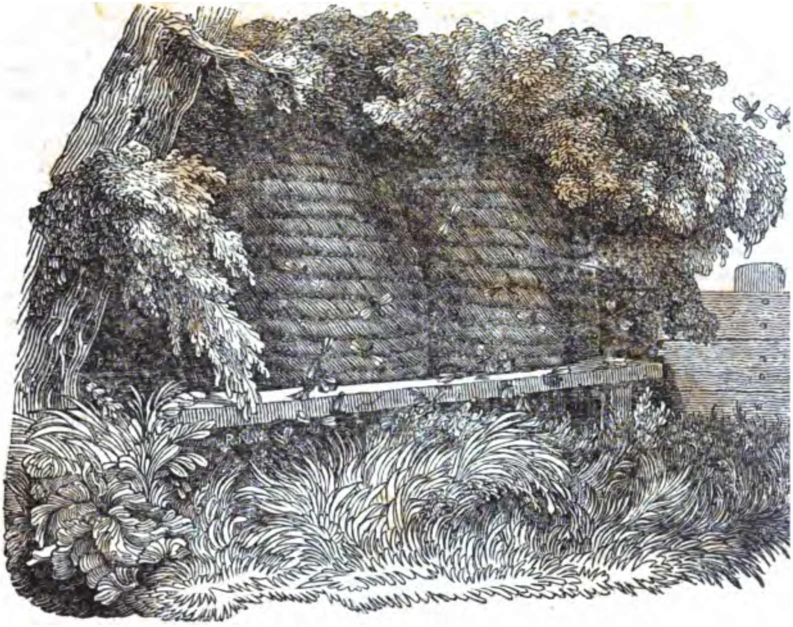
Coral on the coasts of France, being perhaps better chosen than in other countries, has the reputation of possessing the liveliest colours and the greatest brilliancy; that of Italy, however, rivals it in beauty; on the Barbary coasts it attains greater thickness, but the colour is inferiour.

Fifteen different varieties are distinguished in the course of commerce; these, from their colour and degrees of beauty, obtain the several names of *froth of blood, flower of blood, first, second, and third blood,* and so on.

At Trapani, in Sicily, where the principal coral fishery of the island is carried on, it is managed by a very ingenious and simple contrivance. To the centre of a large wooden cross is fixed a stone sufficiently ponderous to carry the cross to the bottom of the water. Pieces of small strong net are tied to each limb of this cross, which is poised horizontally by a rope, and then let down into the sea. As soon as it is felt to touch the bottom, the rope is made fast to the boat, which is then rowed about over the beds of coral, and the great stone breaking the branches of the rocks, they become entangled in the net-work, are thus secured, and wrested from their birthright.

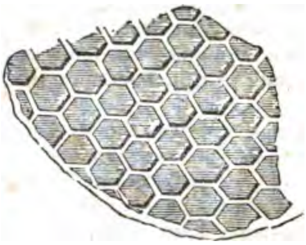
[Neuter Bee.]

[Part of the Swarm.]

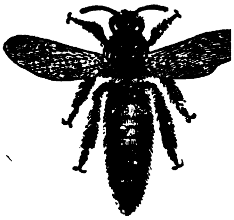


[Female Bee.]

[Section of Cell.]



[Part of the Comb.]



[Male Bee.]

THE HIVE-BEE.

The hive-bee is distinguished from all the other species of bees, by having the shanks of the hind legs furnished with a smooth and concave pollen plate on the outer surface, and destitute of spines at the extremity; by the basal joint of the tarsi, in the workers, being of an oblong form, with its inner surface clothed with fine hairs disposed in transverse layers; by the oblong shape of the body; by the maxillary palpi, or the feelers of the sheaths of the tongue, being almost obsolete and formed of a single joint, and by the oral apparatus being of an elongated form.

The hive-bee may be regarded as one of the most perfectly social species of insects, and one whose economy is regulated by the possession of a more perfect degree of instinct than is perhaps possessed by any other invertebrated animal. Another peculiarity, necessarily dependant upon the social habits of these insects, is the existence of individuals which have been regarded by many as a third sex, but which modern investigations have ascertained to be female insects, whose internal and sexual organization is in an undeveloped state. These individuals, neuters or mules, or workers, or female non-breeders, as they have been termed, constitute the gre mass of the population of a society: they are t smallest members in the community, a circumstan probably dependant upon their imperfect organiz tion (if we may be allowed to use the term to animal possessing such perfection of habits;) and is to them that the internal economy of the hive committed, and upon them the whole labour of t community devolves.

How skilfully she builds her cell,
  How neat she spreads her wax,
She labours hard to store it well
  With the sweet food she makes—
She gathers honey all the day
  From ev'ry opening flow'r.

Moreover it is their duty to guard and protect t hive and the queen, to feed the young, and to k the drone at the appointed season.

In a single hive, there are sometimes not few than thirty thousand of these individuals. They a distinguished from the fully-developed females having a longer lip, the jaws not notched at the ti and the sting straight.

The perfect female, of which there is but a si gle individual in a hive, is termed the queen, and distinguished by her greater size, more elonga form, brighter colour, shorter tongue, notched jaws, and curved sting. Her duty principally consists in the laying of eggs, and in her proceedings she is attended by a body-guard of workers, who pay her the greatest attention; hence, she is the mother of the hive, not indeed of the contemporary generation, but of the future inhabitants of the hive, as well as of the swarms of the following summer. It is one of the most curious points in the history of this insect, to notice the immense influence which this solitary female has upon an entire population of many thousand bees.. And, indeed, did not the accounts which have been given respecting it, depend upon authors of the most undisputed veracity, it would be next to impossible to consider them to be otherwise than as most marvellous and impossible *fables*. Reaumur, however, by dividing a hive, clearly proved the existence of the more than careful attention and respect with which the queen is regarded. He enclosed the two portions of the society in glass hives, and ascertained not only that such was the case, but also, that whilst in that division which possessed the queen, and but a small proportion of workers, the latter quickly made two combs, the portion without a sovereign, although far more numerous, did not construct a single cell; whence it is evident that the instinctive proceedings of the workers depend on the love of progeny; and what is the more remarkable, it is not for their own offspring that they are content to undergo all their labours, being totally incapacitated from becoming the parents of a hive.

The absence of the queen deprives the workers of no organ, paralyzes no limb, yet in every instance that they are deprived of her they neglect their duties, and unless provided with another queen they refuse food and quickly perish. How difficult is it to attribute these wonderful proceedings to any other cause than the possession of the most perfect reason.

The male bees, of which there are several hundreds, sometimes even two thousand, in a full hive, are idle creatures, doing no work:—

> On others' toils, in pampered leisure thrive,
> The lazy fathers of the industrious hive.

Their only duty is to impregnate the female, and this effected, they are driven from the hive and killed by the workers, who thereupon also destroy the male larvæ and pupæ remaining. They are generally termed drones, a term which has been misapplied to various species of flies which indeed much resemble bees, but which may at once be distinguished by having only one pair of wings.

These drones are of a more bulky size than the other bees, and they are not armed with a sting. Their antennæ are composed of thirteen joints (those of the females and workers having only twelve articulations;) the head is more rounded, with the eyes larger, and meeting behind; their jaws are smaller and very hairy; and the basal joint of the posterior tarsi has neither pollen plate nor brush. They make a much greater noise in their flight than the others, and at the extremity of the body two small corneous appendages are to be observed of a yellow colour, which, with some other internal organs, constitute the sexual apparatus.

In addition to these three kind of individuals, it is to be observed, that there appear to be two sorts of females, namely, the large and small. Reaumur, however, attributes this difference of size to the state of the eggs in the body. There are likewise two descriptions of males, one not larger than the workers, and supposed to be produced from a male egg laid in a worker's cell, and the other much larger, above described. Moreover, there are, according to M. Huber, two sorts of workers; the first, which he calls cirières, wax-makers, being charged with the collecting of food and secretion of materials for the building of the nest; and the second, which he calls nourrices, or nurses, smaller and more weakly, whose cares are directed to the feeding of the young and the domestick concerns of the nest. Huber also noticed another kind of bees, which he terms black bees, and which appear to be only casual inmates of the hive, from which they are always expelled, and often killed by the workers, with which, however, except in having the head and thorax of a darker colour, they agree both in their external appearance and internal structure, having, like the workers, perfect ovaries, although not furnished with eggs. Messrs. Kirby and Spence threw out the hint that those black bees may be superannuated workers, which have lost some of the hairs from off their bodies, and which, being incapable of contributing to the labours of the nest, are banished by the younger members.

Such are the inhabitants of the hive—the chief products of which are beeswax and honey. The former is secreted by the worker-bees from a peculiar apparatus on the under side of the belly, as occasion requires, and is employed for constructing the combs in which the family provision and the young brood are deposited. These combs are boiled in water, after the honey is extracted, until melted; the wax is then separated from the water, and being remelted, it is poured into moulds, to form the beeswax sold in our shops. It has been said that there is hardly enough of this article produced in England to answer the demand for lipsalve alone, the greater portion employed being annually imported from the Baltick, the Levant, the Barbary coast, and North America. Humboldt informs us that not less than forty-two thousand six hundred and seventy arobas of wax, worth upward of one hundred and thirty thousand pounds, were exported from the island of Cuba in a single year. This product is for the most part obtained from the common hive-bees; a quantity by no means inconsiderable is, however, procured from various species of wild bees.

Honey is obtained by the bees from the nectaries of flowers, which, as is well known, are constantly secreting a sweet nectarial fluid. This is sucked up by the tongue of the insect; a portion of it is consumed at once for its support, but the majority of the supply, although taken into the stomach of the bee, is again regurgitated and poured into the cells of the hive for the food of the grubs and the use of the community during winter. These cells are placed in the most inaccessible parts of the hive, and are closed with waxen lids, but the honey destined for the use of the nurses, workers, and drones, is deposited in unclosed cells. Some difference seems to exist whether the honey, while retained in the stomach of the bee does not undergo some change, and this idea is strengthened by Reaumur's experiment, from which he obtained honey from the nests of bees fed upon sugar. Moreover, in each honey-cell there is a creamlike layer or covering of a thicker consistence than the honey itself. This layer is perforated by the bee, when it deposites its honey in the cell, through a hole made by the fore-legs, and which is closed before the bee flies away. The quality and taste of honey depend, therefore, upon the plants frequented by the bees; thus, the finest-flavoured and most delicate honey is collected from aromatick plants, and has been stored in clean and new cells, for which reason, and not because it is elaborated by a fresh swarm of bees, it is termed virgin honey. The peculiar taste of the fine Narbonne honey has been attempted to be imitated by adding an infusion of rosemary. Hence it is advisable to have large patches of such plants as borage, viper's bugloss, mignonette, lemon-thyme, and sage, in the neighbourhood of bee-hives. Lime-trees, furze, heath, and clover, are also desirable auxiliaries.

Honey, however, occasionally has been found to have acted like poison, a circumstance probably owing to the bees having extracted it from poisonous plants. Many of the ancient writers contain facts on this subject, and in particular Xenophon has recorded in his Memorabilia that a number of Greek soldiers, during the celebrated retreat of the ten thousand, were violently affected by honey, which they had eaten near Trebizond. Tournefort, when travelling in Asia, made some inquiries upon the subject, and discovered a shrub growing in the neighbourhood of that place, which is well known to produce similar effects. He says, "There is a kind of rhododendrons about Trebizond, whose flowers the bee feeds upon, and the honey thence drives people mad."

Dr. B. S. Barton, in a valuable paper in the fifth volume of the Transactions of the Philosophical Society of America, after detailing the statements of classical authors upon the subject of poisonous honey, has stated that, in the autumn and winter of 1790, the honey collected near Philadelphia proved fatal to many, in consequence of which it was discovered, after an inquiry instituted by the government, that the honey had been chiefly collected from the flowers of the *Kalmia latifolia.* He also mentions that a party of adventurers removed some hives of bees from Pennsylvania to New Jersey, in the hope that the savannahs of the latter country might be favourable to the increase of these animals, and, consequently, to the making of honey; they accordingly placed them in the above situations, and where the *Kalmia angustifolia* was the principal flowering shrub; the bees increased prodigiously, and the enterprise appeared successful, but it was soon found that every one who ate of the honey became intoxicated to a high degree. It was then made into metheglin, but with a similar effect to those who partook of it. The usual symptoms were a dimness of sight, or vertigo, succeeded by a delirium, which was sometimes mild and pleasant, and sometimes ferocious; intoxication, pain in the stomach and intestines, convulsions, profuse perspiration, foaming at the mouth, vomiting, purging, and, in a few instances, even death. Sometimes vomiting was among the earliest symptoms, and in that case the patient was readily relieved, although a temporary
weakness of the limbs was not an uncommon
sult.

Dr. Hosack has recorded two cases in which
substance produced violent vomiting, a coldnes
the extremities, and a livid appearance of the c
tenance. The pulse was reduced to about tw
in a minute; the spontaneous vomiting, howe
being followed by a dose of castor-oil, together
the application of fomentations, relieved the su
ers. In these cases the honey was of a dark
dish colour, and a thicker consistence than usu
sold in the market.

From the facts mentioned above, Dr. Barton i
opinion that the poisonous nature of the hone
owing to the bees feeding on poisonous plants,
as the *Kalmia* of various species, the *Andron*
Mariana, which is injurious to sheep, the *Rhodo*
dron, the *Azalea meliflora*, and the *Datura*, and
recommends that every fetid or poisonous veget
should be removed from the habitation of these
imals.

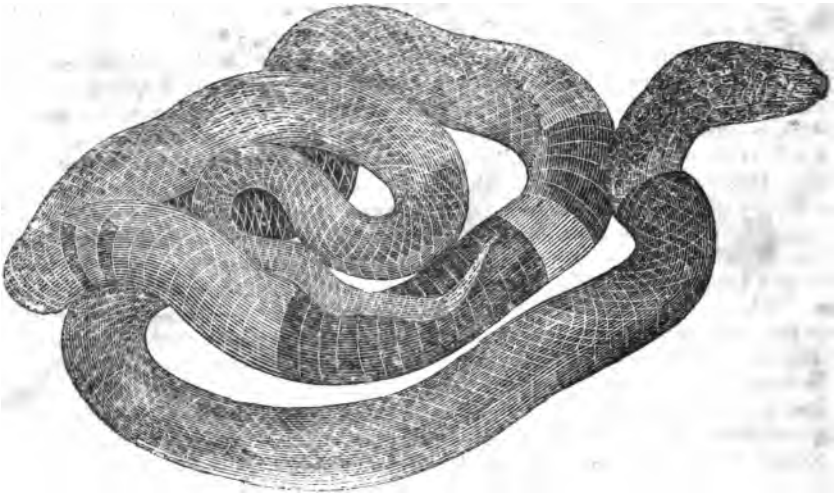
THE VIPER.

The viper (*vipera*) is a genus or rather famil
poisonous serpents, having poison fangs unaccon
nied by other teeth. They occupy the same p
in the eastern continent that the *Crotali* (rattlesn
and triangular-headed snakes) occupy in Ame
and with them include the whole of the class *O*
which have poison fangs; the other poisonous
pents have common teeth along with their po
fangs, and are all aquatick in their habits, constitu
what is called the *Hydra* family.

The vipers of the eastern continent are more
merous and varied in their species than the *Cr*
of the western; but taking them on the whole,
are not so formidable in their appearance or so d
ly in their venom. There are, however, except
to this, depending partly on the species and p
on the warmth of the climate and the season; an
those extreme cases, wounds inflicted by any s
ones are attended with the most fatal consequen

The vipers occupy the same place, both in
system and on the globe, among the poisonous
pents, which is occupied by the colubers, among
true serpents which are not poisonous; and as
have the plates under the tail double as well as
colubers, they have been confounded together,
the poison of the vipers has been imputed to the
ers which are certainly not poisonous. This co
sion of two sections of animals so very differen
those are in the character which gives them
chief interest with mankind, has often been pro
tive of double mistakes. The harmless colu
have been persecuted as if in possession of de
venom, and people have been terrified at them
the other hand, some have, from experience of
harmless nature of the colubers, been led to tan
with the adders, and have paid dearly for their te
ity. The true criterion as to whether a serpe
or is not poisonous, is the presence or the abs
of the poison fangs.

The poisonous ones are also less lively in
motions, as the few serpents which are harmless
less lively than the snakes; the principal distinct
are, however, to be sought in the appearance of
species. There is one character which prevents
vipers from being confounded with those poiso



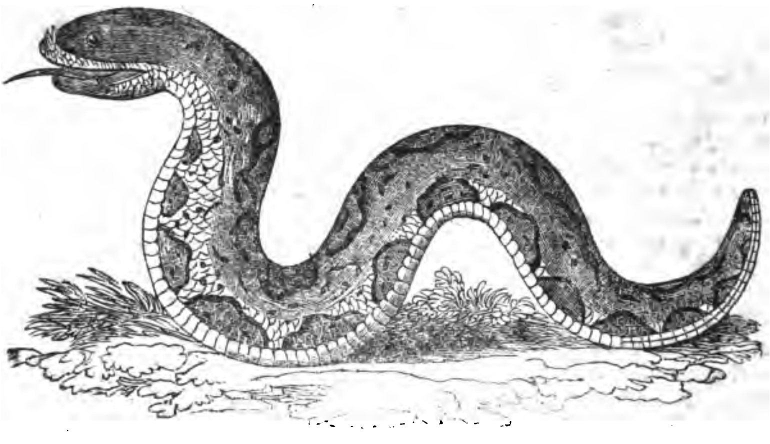
[Naia Haje.]

representatives in the west, the crotali. The last have second or posterior lappets to the nostrils, and the vipers have not. Practically this distinction is of very little consequence, as the two are never found in the same places, and though they were, they are equally to be avoided.

The viper family, or rather tribe, admits of subdivision into four sections; the first having the scales on the head of nearly the same size and character as those on the upper part of the body, and this is a distinction between them and the non-venomous colubers. The second have large plates on the top of the head, resembling those of the colubers, but they have the poison fangs apart like the former; the third the tail flattened like an oar for swimming, or otherwise differeut from the typical vipers; the fourth have the poison fangs in the same row with other maxillary teeth, only larger in size, and the scales on the belly and tail like those of the *boa* and *crotalus*, but as they do not inhabit the same part of the world as either of these, there is no danger of confounding them in wild nature. They make in all ten genera, or sub-genera, in Cuvier's arrangement.

Naia Haje. This is an Egyptian species, which has been celebrated from the remotest antiquity. The inflated neck, and often the erect attitude, which we observe in the serpent of the ancient paintings and sculptures of Egypt, is proof that this is the serpent which they made the emblem of the protecting divinity of the world, and, as such, placed it as a guard, at each side of the globe, upon the portals of all their temples. There is little doubt, that, if Cleopatra did poison herself by the bite of a serpent, the haje was the *aspic* which she employed for the purpose—only it could not have been procured from the mud of the Nile, as it is not aquatick. Its markings are greenish and brown; and it cannot inflate the anterior part of the body like other vipers. It has been taken advantage of by the jugglers as well as its congener, who, by pressing its occiput, can make it as stiff as a stick, so as alternately to seem a rod, and a serpent. The power that it has of erecting itself when alarmed, or otherwise excited, is probably the reason why the office of a guardian was conferred upon it.

El affah, is the name of the other serpent remarkable for its quick and penetrating poison. It is about two feet long, more or less, and as thick as a man's



[El Affah.]

arm, beautifully spotted with yellow and brown, and sprinkled over with blackish specks. They have a wide mouth, by which they inhale a great quantity of air, and when inflated therewith they eject it with such force as to be heard to a considerable distance. These mortal enemies to mankind are described by Jackson, as abounding in the desert of Suse, where their holes are so numerous that it is difficult for a horse to pass without stumbling.

METHOD OF PROCURING AND PRESRVING OBJECTS OF NATURAL HISTORY.

We have had numerous applications from our subscribers to furnish in the Magazine the necessary instructions for the procuring and preserving objects of Natural History. In compliance with this call, we commence in this number a course of articles which will be extracted from different works, but chiefly from the "Manual of the Practical Naturalist." The instructions here given will be very explicit; sufficiently so to enable any person who has the least inclination, to procure and preserve a valuable collection.

Of taking Birds.—In whatever manner the taking of birds is to be performed, the operator should furnish himself with a pair of pincers, paper, cotton, flax or clean tow, and plaster of Paris in powder. Should the weather be hot, or the place of hunting distant, so as to hazard the spoiling of the game ere it can be sent home, have a tin box containing nettle, mint, and such aromatick plants as grow on the banks of rivers; in this pack the birds, after preparing them as we shall presently direct. This is recommended as a sure method by M. Boitard, who alleges in its favour an experience of more than twenty years in Italy and the south of France, where from the heat of the climate corruption in ordinary cases takes place in a few hours.

When a bird is shot, secure him immediately, that he may not soil his feathers with the blood of the wound. Seek out the wound, and raise the feathers which cover it. Put a quantity of the powdered plaster[*] upon the wound, and thrust into it a plug of cotton; then add more of the plaster, and when the bleeding is quite stanched, replace the feathers. Cleanse the mouth and stop it with the tow or cotton, introducing a quantity of plaster. This precaution must be particularly observed in the case of birds of prey, as they often disgorge their food in dying, and sometimes after death. The nostrils also should be plugged with cotton, on account of the fetid matter which commonly escapes therefrom; in the vulture this matter is so strong in odour, that when the feathers become imbued with it, nothing can remove the scent. In performing the operation, care should be taken not to distort the nostrils or the corners of the mouth, as in many species of birds these points indicate generical or specifick characters.

If it be a bird feeding upon fish, such as the pelican or heron, cleanse not only the throat but the crop and pouch, for the least pressure would force out their contents and soil the plumage. To empty the pouch of a pelican, you have only to open his beak and take out the contents with your hand. In a bird without a pouch, the process although longer, has hardly more difficulty:—hang him up by the claws with the head downward, shake him, and squeeze the neck with a gentle pressure, passing from the breast down to the mouth; this will force out the contents of the stomach. After this, stuff his mouth with plaster and cotton as above directed. The escape of the excrement is prevented in the same way.

This is the moment when the naturalist should make the following indispensable observations. Open his eyes and take exact note of their colour;—measure his extreme length from the point of the beak to the end of the tail;—and, if you have had opportunity before shooting him of observing his attitude, note it down, that when he is stuffed he may be placed in the same position. These observations may consist chiefly of the following:—

1. Does he perch[†] or otherwise?
2. Are his thighs[‡] bare, or hidden by the plumage of the belly?
3. Is his body while at rest placed vertically, obliquely, or horizontally?
4. Are the wings drawn up, or hanging down?—Do they cross over the tail?—Are they confounded and united with the feathers of the breast and back for a third, one half, or two thirds of their length from the top?—Do their tips reach to the end of the tail? or half its length? or a quarter? &c.
5. What is the exact colour of the claws—beak—ceres—and glands?

These remarks, although they may appear unnecessarily minute, yet are very essential. One example out of a thousand will suffice. Suppose you have shot a young male or old female *cresserelle*;[§] the most exact description will not enable you to distinguish it from a female *cresserellette*, unless you note the precise length, which is two inches longer in the first-mentioned bird: or unless the wings and tail be compared, as the wings in the cresserelle reach but three fourths the length of the tail. These are the only clear distinctions of the two species.

Having followed the above directions, hold the bird by the bill, and shake him gently to get rid of the superfluous plaster, and return the feathers to their natural position; in aid of this you may blow upon him, but always in the direction of the feathers; then roll up a sheet of strong paper into a cone, and place him head first within, taking care not to derange the feathers, it being extremely difficult afterward to replace them properly: the legs should be stretched along the tail, and the wings placed close: then close up the package, after placing within the notes you have taken respecting the bird; then put it carefully in a box or bag, and if you have several of these packages put the largest at the bottom.

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[*] In these cases, when plaster is not to be had, you may substitute dry earth, ashes, or bran.

[†] To *perch*, in the language of ornithology, is to follow the habit of alighting on a branch or rail, in contradistinction to alighting on the ground or any flat surface: thus a robin perches, a duck does not.

[‡] In the present instance, the word *thigh* is used in the popular application. The scientifick nomenclature gives another name to this limb of the bird.

[§] The *Kestrel* of Buffon, the *Stannel* or *Wind-Hover* of others. *Falco Tinnunculus* of Gmelin.

When you take a bird in a snare or net, be careful in killing him that he does not beat his feathers off in struggling; seize him by the two fingers under the wings, between the breast and the belly, and pinch him till he is suffocated. Taking with nets is a tolerable method of obtaining small birds in good condition, but requires a degree of skill which is only attained by long practice. Its success too is hardly certain, except during the spring; when, in the season of pairing, the feathered tribe lose their timidity and allow themselves to be approached.

Many interesting subjects are sometimes taken by birdlime, but they are often quite spoiled by this substance. Nevertheless, if a bird taken in this manner have saved enough of his plumage to render him worth preserving, and his rarity make it an object, he may with care and patience be cleansed, thus:—Rub the limed feathers with fresh butter till the lime and butter coalesce, which you may know by the mixture's not sticking; remove as much as you can scrape off with a knife, and wash the remainder with a strong solution of potash; the lime being removed, wash again with clear water and dry it with powdered plaster. For want of potash, make a strong lie of equal parts of ashes and water; let it stand twenty-four hours, and decant it clear. If neither of these lotions be procurable, you may use very strong soap-suds several times renewed.

Some persons, after applying the butter to the limed feathers, add a quantity of ether, and afterward wipe the feathers dry with tow. This is doubtless the most expeditious way, but has the disadvantage of discolouring the plumage.

In addition to the above methods of procuring subjects, there is another which is by no means to be neglected; this is, to go to the markets where game is sold. But ere you purchase a bird, however valuable he may appear, satisfy yourself that he is capable of preservation. Examine first the claws, the bill, and the large beam-feathers of the wings and tail. If none of these are wanting, see whether the scull be not broken, as many persons crush with the hand the heads of those birds which they take in nets, or, when shooting, finish them by beating their heads; in these cases, the bones of the head being fractured, it will be difficult to restore it to its true shape, and with any care it could not be arranged with firmness. Still, in the case of a very rare subject, these circumstances will not detract wholly from its value.

Examine moreover whether the flesh be sufficiently free from putrefaction to preserve the feathers upon the skin in the process of flaying. This you cannot always know by the smell, for the wound will sometimes exhale an odour which infects no other part. Examine attentively the small feathers at the corners of the bill and the cheeks; if they hold firmly, the bird is capable of preservation, but if you can rub off these feathers with the finger, and the skin beneath feels damp, abandon him as unfit for your purpose; he would part with his plumage or come quite to pieces the moment you attempted to take off the skin.

Much attention is requisite in the selection of birds; upon this depends the freshness and brilliancy of colour, which gives them their greatest value. A bird reared in a cage loses his gracefulness, the beauty of his dress, and sometimes the characteristicks of his species. It is only upon the summit of the craggy rock, that we find the enormous bird of prey armed with his long and sharp talons. It is upon the sandy shores of the ocean or the banks of rivers, that we must look for the feathered combatants armed with a splendid cuiras of long and slender plumes; the woodpecker and the sparrow are decked in the gaudy dress of the pairing-season, solely when they inhabit the solitude of the forest. The naturalist therefore will not make his selections either from the barnyard, or the aviary of the bird-fancier. Nature must be studied in the fields.

The nomenclature of birds is at present thrown into much confusion, by the errours of writers who have mistaken young individuals, females, and old males of a single class, for different species. Men of high talent, Buffon himself, cannot be exempted from this imputation. This great naturalist has given the name of *faucon* to the *falco peregrinus* of Gmelin;—he has made one species of the full-grown male; a second species of the young male, which he has named *faucon sors;* a third species of the year-old male, which he has called *faucon noir passager;* and a fourth species of the very old male, which has received from him the title of *lanier.* An intelligent amateur should employ all the means in his power to collect every variety of age and sex, as well as that variety occasioned by moulting. He who in this manner is enabled to make the acquisition of a whole genus, has rendered a true service to the study; his cabinet will possess more value in the eyes of a naturalist, than if he had heaped together thousands of individuals, rare in themselves, but isolated in respect to classification.

Birds of prey in general, and particularly those of the hawk kind, (genus *falco,*) deserve the first attention of the naturalist; next follow those which frequent the shores of the sea and the banks of rivers; afterward, those of the *passer* tribe.[*]

SIMILES,

I.

THERE'S a cloud in the east—'tis like night in its hue,
But the rifts in its gloom reveal touches of blue;
So, oft, when the spirit would faint in despair,
We catch glimpses of hope through the twilight of care.

II.

In a desolate spot as gay flower ever grew in,
I saw a sweet rose leaning over a ruin;
And I said, " When long years steal life's freshness away,
May Love, like that rose, lend a smile to Decay!".

III.

The frail water-lily is tossed to and fro
On the stream, but its roots cling unshaken below;
Thus the soul rides in safety adversity's wave,
When its anchor is cast on the " Mighty to save."

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[*] The sixth order of birds, according to the Linnæan system, comprising all the singing-birds.

CAUSES OF POVERTY.

[From Sedgwick's Publick and Private Economy.]

There is a large class of employments that may be called *the frivolous employments.* It cannot be said, that the labourers in them produce nothing, but that they produce nothing of substantial value.

These labourers are not idle, that is not the difficulty; no, many of them work like slaves, late and early, and in the most unwholesome occupations. The singularity of this kind of labour is, that though the labourers earn wages, and often very high wages, still that they do not produce anything of substantial utility, nothing that increases the general wealth, and thereby enables other labourers to fare the better for the work they do. The labour here meant is that immense amount of labour consumed in the *fashions.*

Fashion, fashion, this is the only tyrant left to exercise an uncontrolled sway over the labour of the people of the United States. It is a prodigious passion for finery and fashion, that makes poor and keeps poor very many among us. The rich employ the poor in this kind of ostentation, to gratify their love of expense, and to keep up their superiority of appearance, and those who work for small wages do not know that there is any other mode of getting a living. The rich have not been taught any nobler manner of spending their money, nor the poor that there is any way of getting rid of this kind of degradation. There are in every country a given number that want good food, clothes, houses, domestick animals, gardens, and other proper accommodations and enjoyments, but they cannot have them unless they will work to produce them. At present, instead of employing our capital in setting people to work for what they want, or rather should desire, we employ them in fabricating what they do not want, and should not desire. The evil, in respect to these frivolous occupations, is, that neither rich nor poor procure, with their labour or money, the best enjoyments in their power, but like children, cover their bodies, and fill their houses, with bawbles, playthings, and trinkets. These playthings, bawbles, and trinkets, are not worked for because they possess true beauty, taste, and elegance, or are they even thought to possess them. Elegance and beauty, always, in due proportion to his ability, are proper objects for the labour of man, rich or poor; and one of the great causes of poverty at present, is, that the poor are not trained to admire, and of course, not to labour for them. Much of this beauty is so cheap, and so easily obtained, that the poor would find in it a full indemnity, and more than an indemnity for all their imagined deprivations of the pleasures of the vain and sensual. But this is not our education; on the contrary, the country is deluged with gew-gaws; there is an immense expenditure upon the most frivolous products, in and out of doors, upon our dress, furniture, equipage, &c., for no better reason, than that it is the *fashion.*

And what is fashion? The story is: "That one Calthorp purged John Drakes, the shoemaker of Norwich, England, in the time of King Henry the eighth, of the proud honour which our people have to be of *the gentleman's cut.* The knight bought some fine cloth and sent it to the tailor's to be made. John Drakes, the shoemaker, seeing the cloth, told the tailor to make him one of the same, and the same fashion. In came the knight, and seeing the shoemaker's cloth, asked whose it was. The tailor told him, it was the shoemaker's, and that he wanted a coat after the fashion of the knight's. 'So be it,' said the knight, 'cut mine as full of gashes with your shears as you can.' The shoemaker could get no time to go to the tailor's till Christmas. Seeing his coat cut full of gashes he began to swear. 'But,' said the tailor, 'I have done nothing but what you bid me, for as Sir Philip's garment is, so is yours.' 'By my latchet,' says John Drakes, 'I will never wear gentlemen's fashions again.'"

I shall, for the present, mention one instance only of the expenditure of the *publick* money for fashion sake, and that is in the dress of a midshipman in the American navy. When he enters, as midshipman, he must be fourteen years of age, and is, perhaps, the son of a poor mechanick, farmer, or clergyman. His annual pay, including rations, amounted to three hundred and eighteen dollars, previous to the winter of 1835, when it was increased by act of Congress.

In the year 1830, the then Secretary of the Navy issued an order, regulating the costume of several of the officers; accompanying these orders, were patterns of the dresses required, of the swords, &c. The midshipman's coat, (full dress,) is particularly prescribed; it must be an *embroidered* coat. It is made by working a profusion of silk braid upon the sleeves and other parts of it. This coat cost at the shop of a fashionable tailor, in New York, in the year 1832, fifty dollars; the embroidery on it, as a part of that fifty, fifteen. It was said, at that time, that the entire full dress cost one hundred dollars.

Here is a boy, then, that cannot be known as the servant of his country, without an embroidered coat, which is not worn by the President, or any member of Congress, or any private gentleman in the country. Neither is it worn by any member of the house of Commons, or of the house of Lords, upon ordinary occasions. These are declared to be the most simple, well-dressed gentlemen in England. The first lesson taught to this boy is a lesson of profusion, to spend what he never earned, and more than he ever spent before, and for no better reason, than that this is the warlike fashion; and still the sensible gentlemen of the navy despise this finery, and object to it for the same reason that a farmer or mechanick should. The money that a country pays its publick officers should be mainly for good work and noble deeds; these are always entitled to good wages. Little do the people know of the immense amount of their money paid by government in follies of this kind.

Fashion does not mean a good fashion; so far from it, that it is true, that there are admirable articles, such as particular kinds of clothes, and other things, of the most excellent and durable workmanship, that are thrown by, even by those who earn their daily bread, and never resumed, because the fashionable part of the publick have abandoned them. Thus, the labourers do not bury their talents merely, but throw them into the sea; they voluntarily give up a power which feeds them and clothes them, which they have gained by their own ingenuity, and hard work, and surrender to vanity and pride the charter of their freedom.

Fashion, therefore, does not imply anything solidly useful, substantial, or beautiful, (for good and useful fashions should be adopted of course,) nor that it is better than a former, more fit or graceful, but only, generally, that it has been introduced by some insignificant people in London or Paris, and thence transplanted into this country by merchants and traders, to turn the heads and empty the pockets of the people into their own. Besides, there are thousands, not only in London and Paris, but in our own country, whose sole business and trade, is, to get up these fashions, to establish them, to set them afloat in the world. It is by thus following the fashion, not on account of intemperance, or any other vice, not on account of pauper wages, and the necessity, as they think, of turn-outs, that many of our respectable mechanicks and labourers, in the factories and elsewhere, sacrifice their independence for a bawble; that our upright and otherwise high-minded farmers, load their estates with mortgages, and finally reduce themselves to beggary; that the very poorest of the people sacrifice their last shilling in some tawdry decoration of the person or fashionable sensuality, who have not sound shoes, or stockings, or a whole flannel garment.

In this way the utmost skill and ingenuity of the mechanick and manufacturer, are called forth to keep up the folly, to vary the mode, to change the stripes, to make the thing large or small, round or square, black or white, short or long, or in some other form, or of some other colour than it was before, for it matters not what form or colour, only that the thing be changed. Change, change, is the eternal, clamorous cry of fashion! Much finery is made in Paris and in other parts of France, principally for our market alone, in the same way as we buy and make beads and other trinkets, to send to savage nations. These worthless things first appear among the extravagant people of the cities; the refuse and sweepings are afterward sent to filch the money of our plain country-people. Their life is short, however, perhaps six months, or a year, in town or country, at the end of which time they are discarded; for nothing is so disgusting to the chameleon eyes of fashion as old finery—and then it may be seen on the backs of servants, as presents from silly masters and mistresses, who are for ever complaining of bad service, and who thus debauch the morals and tastes of the people whom they hire, by the use of that which is entirely unsuitable to their condition. Another part of this finery is doled out by hard-hearted and dishonest employers, to the very poorest of the people, in pay for *under-price wages;* for none work for ever so little a pittance that some cannot be found to work for a less, and thus these miserable people, by their vanity and pride, and running at the heels of the rich, are kept ground into the very dust. If those who call themselves the working-people, would "cut" the fashionable world, they would create a new world for themselves; this would be better than a thousand turn-outs.

Of all the ways of spending money, few can be thought of more contemptible than to load the head, neck, ears, body, fingers, feet, with a mass of finery and trumpery, created only by immense labour, and to be discarded for ever upon the first turn in the fashions: if done by the rich, it is extreme folly—if by the poor, certain ruin. The silly people who do not know what their money is worth, or stands for, ought to have a coin of their own, stamped with the figures of houses, horses, family utensils, loaves of bread, &c, to show them that these are the things that they are wasting and destroying. Nothing belittles the mind more than the employment of it upon mere fashion—perhaps an embroidered coat, or a button on it, or a shoestring, or riband, the height of a hat or cap, or something equally insignificant. One of the first objects of those who set on foot ostentatious fashions, is to keep themselves as far off as possible from the common people; for, the moment that these fashions descend to them, the bubble bursts—there is an end of the fashion for ever!

It is this ostentatious tyrant, fashion, that breaks up families, by setting a barrier between the rich and poorer members of them; it is this same tyrant, that destroys that sympathy, and intermingling of different classes, at once so benevolent and so necessary in a great republican country; it is this tyrant that severs the bonds of love. Let the whole nation, therefore, cast of "these hair-devices, adulterous trinkets, and monuments of their shame!"—let the labouring people of the United States rise in their might, and proclaim to the world their regeneration!

As I intend hereafter to give some account of the fashion-trade, I will here make but one statement in regard to it.

It has been supposed that in England, at the present day, "the quantity of gold and silver in actual existence, including utensils, ornaments, jewellery, trinkets, and watches, is three or four times as great as the value of those metals which exist in the form of money."

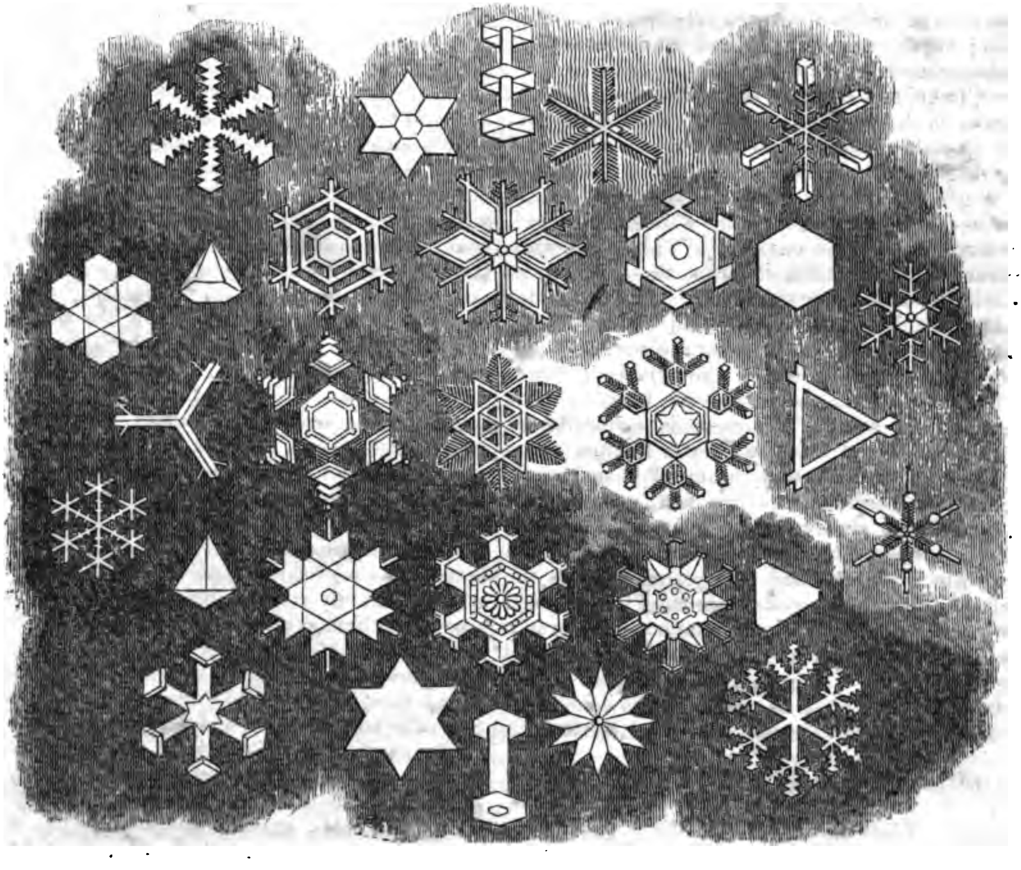
What proportion of this immense amount is consumed in bawbles, trinkets, useless gilding, and plating, sham ornaments, &c., it is impossible to say. It is certainly not intended to include so useful an article as a watch, the wearing of which has, within a few years, been discarded by a certain portion of fashionable females, and for no better reason than that the common people now wear watches.

If the rich only purchased these bawbles and trinkets, the evil would not be so great as it is, though that would be bad enough; for every rich man's money may be well employed, not only for his own advantage, but for that of the poor also, and a thousand times as much if he had it. It is impossible that so many human beings should consent to be employed in ministering to each other's vanity, in fabricating trash for their mutual use, did they not suppose that it must be so—that it is best that it should be so. Yes, they believe this to be true political economy; and they show some of the greatest teachers to be on their side. Therefore we are taught to waste, destroy, consume, that the poor may find employment. They say, that if the rich did not scatter, the poor would starve; whereas the fact is, that the more wasteful the rich are, the more poor people they create. They say, also, that if the rich did not spend their money like children, they would hoard it like misers. The way, then, to satisfy all men, both rich and poor, that it is not for their comfort and happiness to spend any part of their money, or labour, which is the same thing, in the many wicked and stupid ways pointed out in this article, is to prove to them that there a great many ways. The way in which a nation spends y, will *generally greatly depend* upon what e produced—upon what they have created ork, and this will decide what occupa- and trades there shall be. The *useful* es are those by which alone the great can prosper. It is plain, then, that comfort, the independence, the re- a people will much depend upon the only, but the kind of productions that bour creates. The great reformation at pres- in the world is, that the people are more usefully and virtuously employed than they were, for this produces improvement in all things. These virtuous labours are the foundation of civilization—of our Christian civilization—of the civilization of the present time; not Roman civilization, where the rich hired the poor, at their private social parties, to kill each other in gladiatorial combat, for the entertainment of the company. If, then, there be now an improvement in the labours of the people, in what they are hired to do, it may be greater still, if they labour now more to their own advantage than they once did, they can go on in the same good course. Let this, then, be a cardinal American maxim, that there can never be a limit to the good things which the heart of the people can conceive and execute!

SNOW CRYSTALS.

WATER, undergoing congelation in the heavens, and falling upon the earth, exhibits itself in the form either of *snow* or *hail;* that congealing upon the surface of the earth is termed *ice.* Hail is of the same nature as ice: snow is of the same nature as white frost. That snow may be formed, it is necessary that the aqueous particles diffused through the air should congeal before they have united into gross drops. The causes producing solidification in bodies, may sometimes so operate, that the masses concreting shall assume certain regular and systematick figures. These, in chymistry, are termed crystals. In water, crystallization is ascribable only to abstraction of calorick; but in other substances it is effected also by evaporation. The *crystals of snow,* particularly, are distinguished from all others in another respect; viz. they consist of little, thin, smooth, and narrow bars of transparent ice, so disposed that they form planular or flattened *hexagonal stellæ,* or stars, rather than solid masses of a cuboidal or pyramidal configuration. These stellæ, or stars, though of sufficient magnitude for ocular inspection, are, however, of rare occurrence, the flocculi being ordinarily of irregular and unequal figure. Hence they have been remarked upon by very few. When they do occur, therefore, they should be noted.

How snow should take on this beautiful stellated crystallization, and by what operation the various modifications of these stars are produced is not yet ascertained. Dr. Grew, however, has endeavoured to clear up this matter by comparing the crystals of



[Snow-Crystals.]

snow with those of other substances. He has not particularized any modification excepting that wherein the radii of the stars are pinnated with collateral branches diverging at acute angles. The following are his own words: "Nitre crystallizes in the same slender spiculæ. Salts of hartshorn, sal ammoniack, and some other volatile salts, besides their main and longer shoots, have other shoots branched out from them; resembling, as those the main, so these the collateral points of snow. But the icicles of urine are still more near: for in the salt of hartshorn, although the collateral shoots stand at acute angles with the main, yet not by pairs at equal height; and in sal ammoniack although they stand diametrically opposite or at equal height, yet withal at right not acute angles. Whereas in the icicles of urine they stand at equal height and at acute angles both; in both like those of snow. And it is observable that the configuration of feathers is likewise the same: the reason whereof," he quaintly remarks, "is because fowls having no organs for the evacuation of urine," (an egregious errour by the by,) "the urinous parts of the blood are evacuated by the habit or skin, where they produce and nourish feathers." From all this reasoning he concludes, that the *spiritous and aqueous* particles of the drops of rain, descending into a colder region of the atmosphere, are apprehended in their descent by those of a *nitro-urinous*, but chiefly *urinous* nature. The whole mass then congeals into these little starry crystals, which are variously modified as they meet with gales of warmer air, or impinge and rub against each other. By these means, says he, "some are a little thawed, blunted, frosted, clumpered; others broken; but the most hanked and clung in several parcels together, which we call flakes of snow."

Dr. Clarke, too, observed the stellar crystallization of snow, on the 2d of April, 1800, during his travels in Russia. The thermometer of Celsius stood at 5° below the freezing point, (27° Fahrenheit.) The crystals were all precisely alike, viz. of the shape of *little wheels*, of about the diameter of a pea, each having six spokes or radii. "This appearance continued," he remarks, "during three hours, in in which time no other snow fell." He also states that the weather was calm; "the snow falling gently upon us as we drove along the streets."

So also Dr. Grew. "He who wishes to learn the nature of snow, should observe it when it is thin, calm and still." The same is confirmed by Monge, president of the late French Institute, who has likewise noticed this beautiful phenomenon. Dr. Black too, corroborates this fact, and remarks that the weather should also be "very cold."

We hence perceive, that the observations of Dr. Grew, Black, Clarke and Monge, all tend to the conclusion, that these crystals are more frequent and more regularly formed, when the atmosphere is in a state of quiescence—a conclusion which might have been readily anticipated, when we call to our recollection that a state of quiescence is considered essential to the crystallization of all other substances.

POPULAR MEDICAL OBSERVATIONS.

PERSONAL CLEANLINESS.

Cleanliness, one of what Aristotle calls the half virtues, is recommended in the Spectator, for the three following considerations: first, as a mark of politeness; secondly, as it produces love; and, thirdly, as it bears analogy to purity of mind. In eastern climates, it is enforced in both the Jewish and Mohammedan law, as part of their religious observances. The regulations prescribed in Leviticus and Deuteronomy are very explicit on this point; and we learn, that Mahomet used to enjoin his followers to wash the face, neck, hands, and arms, before each prayer. Now, as their prayers are repeated five times daily, they are bound to perform their ablutions as often. Besides these, there are others, adapted to particular states and exigencies, which are eminently conducive to individual comfort and health. When the pilgrims to Mecca cannot well procure water in the deserts of Arabia, they still hold in mind the precepts of their Koran, and rub the parts abovementioned with sand.

The importance of preserving the skin perfectly clean, will be better appreciated by a knowledge of the functions of this organ, and its intimate connexions and relations with other parts. The great extent of surface of this membrane, its continuation with, and general similarity to, that which lines the air and digestive passages, and its consequent close sympathy, and, in a measure, community of office with these latter, must not, for a moment, be lost sight of. Let a naked arm be put into a long glass jar, and the space between the two at the mouth, so filled up as to exclude the external air; and we shall soon see the inside of the glass bedewed with a vapour, which becoming denser, is finally converted into drops like water. This vapour is constantly given out or secreted from capillary tubes in the skin of a healthy individual, and is then called insensible perspiration: but when abundant, and condensed into a watery-like fluid, it constitutes sweat. In addition to this, there is also a discharge or secretion, as it is technically called, of an oily fluid; and also of gases, viz: carbonick acid gas, or fixed air, and nitrogen or azote, being that gas, which, in union with oxygen or vital air, constitutes common atmospherical air. But the skin has another set of capillary vessels, by which it imbibes or absorbs watery and other fluids presented to its surface, and also oxygen and nitrogen gases. Now the above gases and vapour are precisely those which are given out and absorbed by the lungs; of course impeded functions of the one will affect the regular discharge of those of the other. Connect this with the facts of an external surface, in some of the lower animals, serving both for the sense of touch and for the absorption of nutritive matter, in place of stomach; and of the continuity and general sameness of the outer or cutaneous, and the inner or digestive, membranes, and we have, *à priori*, most ample reasons why the healthy state of the skin should exert such a powerful influence over the organs of breathing and digestion.

If personal cleanliness, and preserving the vigour of the skin, be neglected, this part loses its delicacy as the seat of touch, and its pores being obstructed, it cannot longer perform its destined offices in the animal economy. Cutaneous eruptions, sluggishness of the other functions, and general disturbance, as in colds, rheumatisms, indigestion, and numerous other ailments, will often be the consequences of such neglect. What we mean to say is, that the common atmospherical vicissitudes would often fail to give rise to colds and rheumatisms, but for the neglect to preserve the skin in its healthy state: nor would various kinds of food, which we accuse as causes of dyspepsy, prove such, were this precaution duly attended to.

We cannot, on this occasion, do better than to repeat the rules proposed by Hufeland for preserving cleanliness and a sound state of the skin; which, "if observed from youth, may be considered as very powerful means for the prolongation of life.

"1st. Remove carefully everything that the body has secreted, as corrupted or prejudicial. This may be done by changing the linen often, daily if it be possible, and also the bedclothes, or at least the sheets; by using, instead of a featherbed, a mattress, which attracts less dirt; and by continually renewing the air in apartments, and particularly in one's bedchamber.

"2d. Let the whole body be washed daily with cold water, and rub the skin strongly at the same time, by which means it will acquire a great deal of life and vigour.

"3d. One ought to bathe once a week, the whole year through in tepid water; and it will be of considerable service to add to it three or four ounces of soap."

A late writer lays great stress on the beneficial effects of washing with cold water; and details minutely the process which he deems most advisable. He recommends a person on awaking, if determined or obliged then to get up, to remain three or four minutes until perfectly collected. The quilt, or some of the outside covering, should next be thrown off, so that he may, for a minute or two, cool gradually. He should then proceed to wash himself, dressed only to the waist—it being impossible to do it otherwise effectually. The following directions are next given.

Dip the face two or three times in a basin of cold water. The eyes may be either open on immersion, or, as it may be easier on beginning, while under the water. After this, water should be squirted briskly into the eyes with a syringe. On the first trials they may be closed, and opened immediately after the dash, but they will soon be able to bear the shock when open. Water should be squirted against each ear. You must next, with the hands, and using soap, wash well the armpits, the back of the neck, behind the ears, the arms up to the shoulder, the breast, loins, and entirely round the waist. After having well dried with a very coarse cloth, you may finish with a fine towel, and then rub with a hard flesh-brush over the body, wherever you can conveniently reach, particularly the chest, arms, abdomen, and small of the back. The arms should then be thrown back very briskly, twenty or thirty times, which will open the chest, and may promote a salutary expectoration. This will altogether occupy, even when well accustomed to it, about twelve minutes, but it will be time well bestowed.

The author asserts confidently, that this practice, when assisted by cleaning the teeth, is a certain preventive of that galling pain, the toothache, and also a cure for those afflicted with it. He of course means that variety called rheumatick. It so fortifies and strengthens the system, that those who have long persevered in it, are not nearly so liable to rheumatism, nor colds and coughs, as before. It also cleans and improves the sight, and contributes much to its duration. The practice ought, of course, to be continued all the year round. The timid are recommended to begin in summer.

The authoress of "A Vindication of the Rights of Woman," says, "Were I to name the graces that ought to adorn beauty, I should instantly exclaim, cleanliness, neatness, and personal reserve. So necessary, indeed, is that reserve and cleanliness, which indolent women too often neglect, that I will venture to affirm, that when two or three women live in the same house, the one will be most respected by the male part of the family, who reside with them, leaving love entirely out of the question, who pays this kind of habitual respect to her person." Elsewhere she says, "In order to preserve health and beauty, I should earnestly recommend frequent ablutions, to dignify my advice, that it may not offend the fastidious ear; and by example, girls ought to be taught to wash and dress alone, without any distinction of rank."

THE INVALID FROM HOME.

Among the advantages attending the diversity of climate, in different parts of the United States, is the important one to those of its inhabitants who are on the list of invalids, that they can obtain all the good effects of change of air and scene, sea-bathing, and drinking mineral-waters, without expatriation or journeying among strangers, in a strange land. From the region of firs and oak in Maine, to that of oranges and sugar in Louisiana and the Floridas, with all the intermediate climates and productions of the soil, the American citizen finds himself under the safeguard of similar institutions; and among fellow-citizens, with whom he is bound by the common ties of language, laws, and customs. He may be said, after weeks of travelling, to have rather changed than abandoned his home—he finds at his new place of abode kind friends, perhaps relatives, ready to administer to all his little wants, and to exclude, by their numerous delicate attentions, that feeling of loneliness and abandonment which often casts a deadly damp over the sensitive mind of the invalid who goes to foreign lands in search of health. If, moreover, he desire a physician, he can obtain a full and patient hearing of all his sufferings, and receive clear and available advice—so different this from the imperfect communication, perhaps by means of an interpreter, which he would have with a foreigner. In every season of the year, we find these advantages realized by the inhabitants of the various sections of the Union. The southerner comes on to the north, to find cooler breezes and protection from the fevers of summer and autumn, or to receive invigoration, after attacks in previous years—while the inhabitant of the north, a prey to rheumatism, or fearing the approach of dire consumption, flies to the south to enjoy its milder winter, and to breathe a more balmy air. Climate, again, changes as we travel west; and the Allegany ridge has often been discovered to serve as a salutary barrier against the chilly east wind sweeping from the Atlantick ocean; as when a resident of the coast has transported himself to the valley of the Ohio or the Mississippi.

Unquestionable as are the benefits to one's health obtained by change of climate and travelling, they are often neutralized by a neglect on the part of the invalid of the common precepts of hygeine. Disappointed hopes and aggravated disease are often, in such cases, laid to the account of the country which he visited, when, in fact, the whole ground of complaint rested with himself. Many families leave home, in the summer season, on a trip, in which the pursuits of health and pleasure are often attempted to be blended—but in which their anticipations of the enjoyments of either are often sadly marred by an oversight of the respective claims of each. For the guidance of all such travellers, we give the following rules, which we earnestly commend to their serious attention.

As regards a single individual, it may be safely asserted that, if not too feeble, nor suffering from a local malady, which would render the exercise too painful, travelling on horseback is to be preferred to any other mode of conveyance.

When a person travels in a carriage, it is desirable to secure a free introduction of air, without his being exposed to a draft or current. It is very beneficial to change the posture frequently, that is, to sometimes sit and sometimes to recline, so as to prevent the fatigue and other unpleasant consequences which would follow a jolting or shaking in one direction.

If possible, the transition from long seclusion in a sick room or house, to going a journey, should not be abrupt. Moderate exercise should be taken for some days beforehand.

Excursions, the object of which is health and the prolongation of life, must not be too fatiguing. The standard here will, however, depend on the state and constitution of the person, and the temperature of the weather. Progression on the road just enough to give change of scene, and to induce that degree of fatigue productive of sleep, will be sufficient. Hence a distance of from twelve to twenty miles a day will often suffice—at any rate to begin with. One ought, above all things, to avoid travelling in the night-time, which, by interrupting the necessary repose, checking perspiration, and exposing the body to unwholesome air, is always prejudicial. By respecting nocturnal rest, one may accomplish twice as much in the day. Even in the case of invalids, compelled for want of private carriages to avail themselves of stages and steamboats, this rule can still be adhered to—since it is in their power to stop at a suitable house in the evening, and prosecute their journey by the next day's conveyance. Nothing can be more absurd, and, in some cases, more injurious to health, than the rapidity with which journeys are commonly made: as if the fate of the republick depended on a certain traveller arriving at a given place in a certain number of hours; and when he arrives there he has, perhaps, nothing to do, and wishes himself again upon the road. When the weather is fine, the traveller may, with advantage, walk a mile or two, so as to obviate the stiffness from setting long in a carriage.

People, especially valetudinarians must not imagine, as is so commonly done, that because they are travelling they can eat and drink more than when they were at home. The reverse opinion is a correct one. The motion in travelling is of itself a stimulus, and hence less stimulating nourishment is then required than in a state of rest. There is hardly any advice more pernicious than that frequently given to those fatigued after a day's journey, to drink a glass of wine, or spirits and water, or the like, to recruit the strength, which can only be suitably renovated by sleep. Such a practice, of which a hearty supper forms part, is of itself competent to produce indigestion, feverishness, and disturbing dreams. The meals of an invalid traveller, or indeed of any person on the road, ought to be of light nutritive food, in moderate quantities, taken early in the morning, or after a ride of eight or ten miles, and early in the evening, after the day's journey is completed; so that some time shall elapse between this last repast, which is both dinner and supper, and the hour for retiring to bed. In the long days of summer, a rest of at least two or three hours is required, during which the invalid can take repose, by reclining on a couch or settee, or indulging in a short sleep. If any aliment be taken at this time, it ought to be a simple beverage, such as a glass of lemonade, or of buttermilk, or milk and water, with a crust of bread or simple biscuit.

In the choice of food, when travelling, it is a good rule to use the common fare of each country or region, provided it be such as general experience shows to contribute to the true nutrition and health of its inhabitants. Food readily obtained, and such as cannot be easily adulterated, is to be preferred. Hence it is safest to use milk, eggs, well-baked bread, plain roasted or boiled meat, and *ripe* fruit in small quantities. This last is still safer when eaten with bread. As a general rule, the wines on the road are bad, and will often be found to disorder the regular drinker of them. Simple water is, after all, the beverage best adapted to all classes and descriptions of persons. Should this fluid be impure, or have an unpleasant odour, as sometimes happens in particular districts of country, it may be rendered sweet by mixing about a tablespoonful of finely pulverized charcoal with a pint of water, then stirring it well round; and after it has stood for a few minutes, let it run slowly through filtering paper into a glass. A limpid and perfectly pure fluid is thus obtained. The charcoal-powder may be carried on a journey in a small bottle well corked.

Pains ought to be taken to select a bedroom for the night which has not been recently painted, or whitewashed or wetscrubbed the same day. It is especially important to see that the sheets are perfectly dry. Should there be the least dampness felt, they ought to be aired before a fire, or, when practicable, a warming-pan passed frequently between them. Many a fatal cold has been caught by neglecting this advice. An additional precaution will be found in carrying with one a thin flannel shirt—supposing that such an article of apparel be not habitually worn. With the same view, some persons take with them what are called "sleeping-trowsers" of linen or cotton, which enable them to dispense with sheets entirely, if there be a suspicion of their dampness.

It is prudent to regulate the day's journey, so that the best publick-house may be reached by sunset, or before nightfall at the latest. Jour. of Health.

AMERICAN ANTIQUITIES.

SETTLEMENT EFFECTED IN VINELAND, BY THORFINN.

(Continued from page 328.)

These three vessels continued their course until they came to a place where a firth penetrated far into the country. Off the mouth of it was an island, past which there ran strong currents, which was also the case farther up the firth. On the island there were an immense number of eider ducks, so that it was scarcely possible to walk without treading on their eggs. They called the island STRAUMEY, (*Stream isle*,) and the firth STRAUM-FIORDR, (*Stream Firth.*) They landed on the shore of this firth, and made preparations for their winter residence. The country was extremely beautiful. They confined their operations to exploring the country. Thorhall afterward wished to proceed in a N. direction in quest of Vineland. Karlsefne chose rather to go to the S. W. Thorhall, and eight men with him, quitted them, and sailed past Furòustrander and Kialarnes; but they were driven by westerly gales to the coast of Ireland, where, according to the accounts of some traders, they were beaten and made slaves. Karlsefne, together with Snorre and Biarne, and the rest of the ships' companies, in all 131 (CXXXI) men, sailed southward, and arrived at the place where a river falls into the sea from a lake. Opposite to the mouth of the river were large islands. They steered into the lake, and called the place HOP, (*í Hópe.*) On the low grounds they found fields of wheat growing wild, and on the rising ground, vines. While looking about one morning, they observed a great number of canoes. As they exhibited friendly signals, the canoes approached nearer to them, and the natives looked with astonishment at those they met there. These people were sallow, and ill-looking; had ugly heads of hair, large eyes, and broad cheeks. After they had gazed at them for a while, they rowed away again to the S. W. past the cape. Karlsefne and his company had erected their dwelling-houses a little above the bay, and there they spent the winter. No snow fell, and the cattle found their food in the open field. One morning early, in the beginning of 1008, they descried a number of canoes coming from the S. W. past the cape. Karlsefne having held up a white shield as a friendly signal they drew nigh, and immediately commenced bartering. These people chose in preference red cloth, and gave furs and squirrel-skins in exchange. They would fain also have bought swords and spears, but these Karlsefne and Snorre prohibited their people from selling. In exchange for a skin, entirely gray, the Skrellings took a piece of cloth of a span in breadth, and bound it round their heads. Their barter was carried on in this way for some time. The Northmen found that their cloth was beginning to grow scarce, whereupon they cut it up in smaller pieces, not broader than a finger's breadth; yet the Skrellings gave as much for these smaller pieces as they had formerly given for the larger ones, or even more. Karlsefne also caused the women to make and pour out milk soup, and the Skrellings relishing the taste of it, they desired to buy it in preference to every thing else; so they wound up their traffick by carrying away their bargains in their stomachs. While this trade was going on, it happened that a bull, which Karlsefne had brought along with him, came out of the wood and bellowed loudly. At this the Skrellings became terrified, rushed to their canoes, and rowed away southward. About this time Gudrida, Karlsefne's wife, gave birth to a son, who received the name of SNORRE. In the beginning of the following winter the Skrellings came again in much greater numbers; they showed symptoms of hostility, setting up loud yells. Karlsefne caused the red shield to be borne against them, whereupon they advanced against each other, and a battle commenced. There was a galling discharge of missiles. The Skrellings had a sort of war-slings; they elevated on a pole a tremendously large ball, almost the size of a sheep's stomach, and of a bluish colour; this they swung from the pole upon land over Karlsefne's people, and it descended with a fearful crash. This struck terrour into the Northmen, and they fled along the river. Freydisa came out, and seeing them flying, she exclaimed: "How can stout men like you fly from these miserable caitiffs, whom I thought you could knock down like cattle! If I had only a weapon, I ween I could fight better than any of you!" They heeded not her words. She tried to keep pace with them, but the advanced state of her pregnancy retarded her: she however followed them into the woods. There she encountered a dead body: it was THORBRAND SNORRASON; a flat stone was sticking fast in his head, and his naked sword lay by his side; this she took up, and prepared to defend herself. She uncovered her bosom, and struck it with the naked sword. At this sight the Skrellings became terrified, and ran off to their canoes. Karlsefne and the rest now came up to her, and praised her courage. They were now become aware that, although the country held out many advantages, still the life that they would have to lead here, would be one of constant alarm from the hostile attacks of the natives. They therefore made preparations for departure, with the resolution of returning to their own country. Sailing eastward, they arrived in Streamfirth. Karlsefne then took one of the ships, and sailed in quest of Thorhall, while the rest remained behind. They proceeded northward round Kialarnes, and, after that, were carried to the northwest. The land lay to the larboard of them; there were thick forests in all directions, as far as they could see, with scarcely any open space. They considered the hills at Hope, and those which they now saw, as forming part of one continued range. They spent the third winter at Streamfirth. Karlsefne's son, Snorre was now three years of age. When they sailed from Vineland, they had southerly wind, and came to Markland where they met with five Skrellings. They caught two of them, (two boys,) whom they carried away with them, and taught them the Norse language, and baptized them. These children said that their mother was called VETHILLDI, and their father UVÆGE; they said that the Skrellings were ruled by chieftains, (kings,) one of whom was called AVALEDMON, and the other VALDIDIDA; that there were no houses in the country, but that the people dwelt in holes and caverns. Biarne Grimolfson was driven into the Irish ocean, and came into waters that were so infested with worms, that their ship was in consequence reduced to a sinking state. Some of the crew, however, were saved in the boat, as it had been smeared with seal-oil tar, which is a preventive against the attack of worms. Karlsefne continued his voyage to Greenland, and arrived at Ericsfiord.

VOYAGE OF FREYDISA, HELGE, AND FINNBOGE; THORFINN SETTLES IN ICELAND.

During the same summer, 1011, there arrived in Greenland a ship from Norway, commanded by two brothers, from Ausfiord in Iceland, Helge and Finnboge, who passed the following winter in Greenland. Freydisa went to them, and proposed a voyage to Vineland, on the condition that they should share equally with her in all the profits which the voyage might yield; to this they assented. Freydisa and these brothers entered into a mutual agreement that each party should have thirty able-bodied men on board their ship, besides women; but Freydisa immediately deviated from the agreement, and took with her five additional men, whom she concealed. In 1012 they arrived at Leifsbooths, where they spent the following winter. The conduct of Freydisa occasioned a coolness and distance between the parties; and by her subtle arts she ultimately prevailed on her husband to massacre the brothers and their followers. After the perpetration of this base deed, they, in the spring of 1013, returned to Greenland, where Thorfinn lay ready to sail for Norway, and was waiting for a fair wind; the ship he commanded was so richly laden, that it was generally admitted, that a more valuable cargo had never left Greenland. As soon as the wind became favourable he sailed to Norway, where he spent the following winter, and sold his goods. Next year, when he was ready to sail for Iceland, there came a German from Bremen, who wanted to buy a piece of wood from him; he gave for it half a marc of gold; it was the wood of the Mazer tree, from Vineland. Karlsefne went to Iceland, and in the following year, 1015, he bought the Glaumbœ estate, in Skagefiord, in the northland quarter, where he resided during the remainder of his life; his son Snorre, who had been born in America, was his successor on this estate. When the latter married, his mother made a pilgrimage to Rome, and afterwards returned to her son's house at Glaumbœ where he had in the meantime ordered a church to be built. The mother lived long as a religious recluse. A numerous and illustrious race descended from Karlsefne, among whom may be mentioned the learned bishop Thorlak Runolfson, born in 1085, of Snorre's daughter, Halfrida, to whom we are principally indebted for the oldest ecclesiastical Code of Iceland, published in the year 1123; it is also probable that the accounts of the voyages here mentioned were originally compiled by him.

A SURVEY OF THE PRECEDING EVIDENCE.

I.—GEOGRAPHY AND HYDROGRAPHY.

It is a fortunate circumstance that these ancient accounts have preserved not only *geographical*, but also *nautical*, and *astronomical facts*, that may serve in fixing the position of the lands and places named. The *nautical facts* are of special importance, although hitherto they have not been sufficiently attended to; these consist in statements of the course steered and the distance sailed in a day. From data in the Landnama and several other ancient Icelandick geographical works, we may gather, that the distance of a day's sailing was estimated at twenty-seven to thirty geographical miles, (German or Danish, of which fifteen are equal to a degree: each of these being, accordingly, equal to four English sea-miles.) From the island of HELLU-LAND, afterward called little Helluland, Biarne sailed to Heriulfsnes, (*Iki-geit*,) in Greenland, with strong southwesterly gales, in four days. The distance between that cape and *Newfoundland* is about one hundred and fifty miles, which will correspond, when we take into consideration the strong gales. In modern descriptions it is stated that this land partly consists of naked rocky flats, where no tree, nor even a shrub, can grow, and which are therefore usually called *Barrens*; thus answering completely to the *hell-ur* of the ancient Northmen, from which they named the country.

MARKLAND was situate to the southwest of Helluland, distant about three days' sail, or from eighty to ninety miles. Here then we have *Nova Scotia*, of which the descriptions given by later writers answer to that given by the ancient Northmen of Markland; "the land is low in general;" "the coast to the seaward being level and low, and the shores marked with white rocks;" "the land is low, with white sandy cliffs, particularly visible at sea;" says the new "North American Pilot," by J. W. Norie, and another American sailor: "on the shore are some cliffs of exceedingly white sand." Here "*level*" corresponds completely to the Icelandick "*slètt*," "*low to the seaward*" to the short expression "*ó-sæ-bratt*," and "*white sandy cliffs*" to the "*hvít-ar sand-ar*" of the Northmen. Nova Scotia, New Brunswick, and Lower Canada, situate more inland, which probably may be considered as all belonging to the Markland of the Northmen, are almost every where covered with immense forests.

VINLAND was situate at the distance of two days' sail, consequently from fifty-four to sixty miles, in a southwestely direction from Markland. The distance from Cape Sable to Cape Cod is stated in nautical works as being W. by S. about seventy leagues, that is, about two hundred miles. Biarne's description of the coast is very accurate, and in the island situate to the eastward, (between which and the promontory that stretches to eastward and northward Leif sailed,) we recognise Nantucket. The ancient Northmen found there many shallows, (*grunnsæfui mik-it*;) modern navigators make mention at the same place "of numerous reefs and other shoals," and say "that the whole presents an aspect of drowned land."

KIALARNES (from *kiölr*, a keel, and *nes*, a cape, most likely so named on account of its striking resemblance to the keel of a ship, particularly of one of the long ships of the ancient Northmen) must consequently be *Cape Cod*, the Nauset of the Indians, which modern geographers have sometimes likened to a Horn, and sometimes to a Sickle, or Scythe. The ancient Northmen found here trackless deserts, (*ör-æfi*,) and long narrow beaches and sand-hills, or sands (*strand-ir láng-ar ok sand-ar*) of a very peculiar appearance, on which account they called them FURDU-STRAND-IR, (*Wonder strands* from *furò-a*, res miranda, and *strönd*, strand, beach.) Compare the description given of this cape by a modern author, Hitchcock: "The *Dunes*, or *sand-hills*, which are often nearly or quite barren of vegetation, and of snowy whiteness, *forcibly attract the attention on account of their peculiarity.* As we approach the extremity of the cape, the sand and barrenness increase; and in not a few places it would need only a party of Bedouin Arabs to cross the traveller's path, to make him feel that he was in the depths of *an Arabian or Lybian desert.*" A remarkable natural phenomenon, which is observed there, has also most probably had a share in giving rise to that peculiar name. It is thus described by the same author: "In crossing *the sands* of the cape, I noticed *a singular mirage* or deception. In Orleans, for instance, we seemed to be ascending at an angle of three or four degrees: nor was I convinced that such was not the case, until turning about I perceived that a similar ascent appeared in the road just passed over. I shall not attempt to explain this optical deception; but merely remark, that it is probably of the same kind as that observed by Humboldt on the Pampas of Venezuela; 'all around us,' says he, 'the plains seemed to ascend towards the sky.'" Thus we observe that the appellation given by the ancient Northmen to the three strands, or tracts of coast, *Nauset Beach, Chatham Beach, and Monomoy Beach,* is remarkably appropriate.

The great *Gulf Stream,* as it is called, which issues from the Gulf of Mexico, and runs between Florida, Cuba, and the Bahama isles, and so northward in a direction parallel to the eastern coast of North America, and of which the channel, in ancient times, is said to have approached still nearer to the coast, occasions great currents precisely at this place, inasmuch as the peninsula of Barnstable offers opposition to the stream, as it comes from the southward. The STRAUM-FIORDR of the ancient Northmen is supposed to be *Buzzard's bay;* and STRAUM-EY, *Martha's Vineyard;* although the accounts of the many eggs found there would seem more precisely to correspond to the island which lies off the entrance of Vineyard sound, and which, to this day, is called *Egg island.*

KROSS-A-NES, is probably *Gurnet Point.* It must have been somewhat to the northward of this, that Karlsefne landed, when he saw the mountain range, (*The Blue Hills,*) which he considered as forming part of the same range, that extends to the region, where we recognise the place named Hóp, (*í Hóp-e.*)

The word HOP, in Icelandick, may either denote a small recess, or bay, formed by a river from the interiour, falling into an inlet from the sea, or the land bordering on such a bay. To this Mount Hope's bay, MONT HAUP's bay as the Indians term it, corresponds, through which the Taunton river flows, and by means of the very narrow, yet navigable, Pocasset river, meets the approaching water of the Ocean at its exit at Seaconnet. It was at this Hópe that Leifsbooths were situate; it was above it, and therefore most probably on the beautiful elevation called afterward by the Indians, MONT HAUP, that Thorfinn Karlsefne erected his dwelling-houses.

II.—CLIMATE AND SOIL.

Concerning the climate of the country, and the quality of the soil, and also concerning some of its productions, the ancient writings contain sundry illustrative remarks. The climate was so mild, that it appeared the cattle did not require winter fodder: for there came no snow, and the grass was but slightly withered. Warden uses similar expressions respecting this region: "La température est si douce que *la végétation souffre rarement du froid ou de la sécheresse.* On l' appelle *le paradis de l'Amérique* parce qu'elle l'emporte sur les autres lieux par sa situation, son sol et son climat." "An excursion from Taunton to Newport, Rhode Island, down Taunton river and Mount Hope bay, conducts the traveller among scenery of great beauty and loveliness," says Hitchcock; and when he adds, "that the beautiful appearance of the country, and the interesting historical associations connected with that region, conspire to keep the attention alive, and to gratify the taste," he will find that this last remark is applicable to times much more remote than he thought of, when he gave expression to the above sentiment.

A country of such a nature might well deserve the appellation of "THE GOOD," which was the epithet the ancient Northmen bestowed on it; especially as it yielded productions whereon they set a high value, and of which their colder native land was for the most part destitute.

III.—PRODUCE AND NATURAL HISTORY.

Vines grew there spontaneously; a circumstance which Adam of Bremen—a foreign writer of the same (that is of the eleventh) century, mentions that he had learned, not from conjecture, but from authentick accounts furnished by Danes. As his authority on this occasion, he cites the Danish king, Sveyn Estrithson, a nephew of Canute the great. It is well known that vines still grow in that region in great abundance.

Spontaneously growing wheat (*sjálf-sán-ir hveiti-akrar.*) At the subsequent arrival of the Europeans, Maize, or Indian corn, as it is called, was found growing here; this the natives reaped without having sowed, and they preserved it in holes in the earth, as it constituted one of their most valuable articles of food. Honeydew was found on the island which lies off it, as is also still the case.

Mazer, (*mausur,*) a species of wood of remarkable beauty, probably a species of the Acer rubrum, or Acer saccharinum, which grows here, and which is called "bird's eye," or "curled maple." Wood for building was also obtained here.

A great number of forest animals of all kinds. It is understood that the Indians chose this region in preference, for their abode, chiefly on account of the excellent hunting.

At present the forests are for the most part cut down, and the animals have withdrawn to the interiour and woodland regions. From the natives the Northmen bought squirrel-skins, and all kinds of peltries, which are still to be found in abundance in this district.

Eider ducks and other birds were found in great numbers on the adjacent island, as is also at present the case, on which account some of them have the name of Egg islands.

Every river was full of *fish*, among which are mentioned excellent salmon. On the coast was also caught a great quantity of fish. The Northmen dug ditches along the shore, within the high-water-mark, and when the tide receded, they found *halibuts* in the ditches. On the coast they also caught *whales*, and among these the *reiòr* (Balena physalus.) In the modern description of this region it is stated, that "all the rivers are full of fish;" and of the waters in this neighbourhood it is said, "il y a une grande abondance de poissons, de presque toutes les espèces." Salmon may be mentioned as one of these. Not long ago, the whale fishery was, in that very region, an important branch of industry; especially for the inhabitants of the adjacent islands. Very possibly the adjacent Whale Rock has its name from the same circumstances.

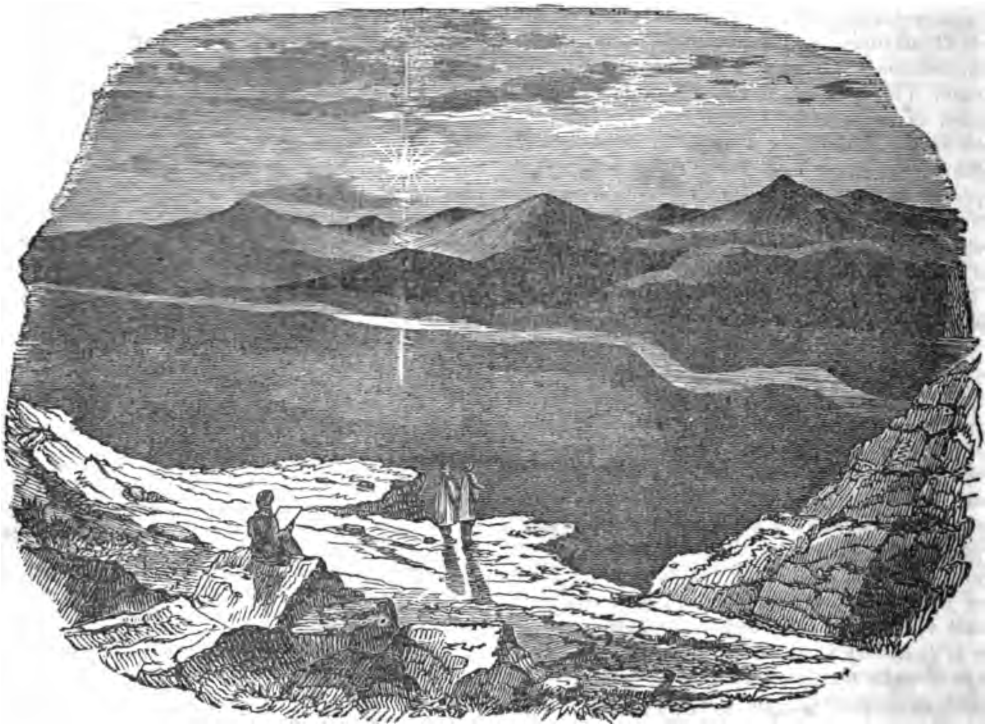
IV.—ASTRONOMICAL EVIDENCE.

Besides the nautical and geographical statements, one of the most ancient writings has preserved an *astronomical* notice, where it was said, that here the days were of more equal length than in Iceland or Greenland; that, on the shortest day, the sun rose at half past seven o'clock, and set at half past four; which makes the shortest day nine hours. This astronomical observation gives for the place, latitude 41° 24′ 10″. The latitude of Seaconnet point, and of the southernmost promontory of the island of Conanicut, is 41° 26′ north; and that of Point Judith, 41° 23′. These three headlands form the entrance boundaries of the modern Mount Hope bay, which the ancients, according to the analogy of their language, no doubt, called Hópsvatn. We thus see that this statement corresponds exactly with the other data, and indicates precisely the same region.

SCRIPTURE ILLUSTRATIONS.

THE PLAIN OF JORDAN.

The valley or plain of Jordan, through which the river flows, is applied to that part between the lake of Houle and the Dead sea. From the accounts of different travellers, it seems to vary in breadth from four to ten or twelve miles in different parts. It is now in most parts a parched desert, but with many spots covered with a luxuriant growth of herbage and grass. Its level is lower, and the temperature consequently higher, than in most other parts of Syria. The heat is concentrated by the rocky mountains on each side, which also prevent the air from being cooled by the westerly winds in summer. This valley is divided into distinct levels: the upper or general level of the plain; and the lower, which is about forty feet below it; the latter varies in breadth from a mile to a furlong, and is partially covered with trees and luxuriant verdure, which give it an appearance striking in contrast with the sandy slopes of the higher level. The river flows through the middle of this lower valley, in a bed the banks of which are fourteen or fifteen feet high when the river is at the lowest. The banks are thickly beset by tamarisks, willows, oleander, and other shrubs.

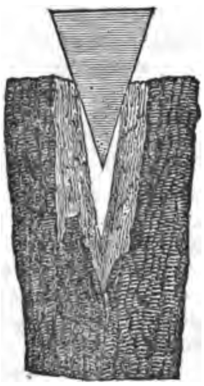


[The plain of Jordan.]

NATURAL PHILOSOPHY.

MECHANICAL POWERS.

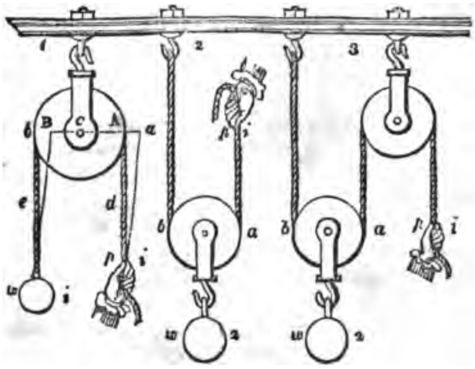
The *wedge* is a double inclined plane, used commonly to cleave wood or stone, and sometimes to elevate a large mass, as part of a building or a ship. The effect of a wedge depends apparently upon friction, elasticity, and the slowness with which motion is communicated to a mass of matter. When a wedge is driven in, the particles immediately in contact with it are, for a moment, displaced: the friction against it prevents it from receding, and when the displaced particles endeavour to resume their relative position the rift is lengthened, as is shown in the woodcut. To the wedge may be referred various cutting tools, such as axes, knives, swords, chisels, and nails and spikes to be driven into wood, as well as pins, needles, awls, &c. The saw and file and rasp are modifications still more remote. The coulter of a plough, the blade of a spade, and other instruments to penetrate the earth, are in the shape of a wedge.



The *pulley*. If a rope be stretched horizontally between two fixed points by equal weights attached to the ends, any very small weight applied to the rope between these points will bend the rope and thus raise the weights. If we suppose the rope to have been perfectly horizontal, the weight applied acts upon those at the ends with a mechanical advantage which may be considered infinite, as it acts at right angles to the direction of the opposite actions of those weights. This is a necessary consequence of the principles of the resolution of forces. The action of one or two forces can have no effect in counteracting a third, unless they act in such a direction that their action can be resolved into two, one of which is opposite to the direction of the third force. While the rope is horizontal the two weights counterbalance each other, but produce no further effect until the rope is bent into an angle. A bending of the rope must therefore take place in consequence of the action of any force, however small. By bending the rope it must raise the weights and support them at a point above their former position, thus producing an equilibrium with them however great they may be. A necessary consequence of the principle on which it depends is, that when a rope or chain of any material whatever is stretched horizontally its weight alone will prevent its being perfectly straight, and no force is sufficient to straighten a rope unless it hangs perpendicularly. Advantage is often taken of this power by seamen in tightening ropes, which have previously been drawn as closely as possible by the direct action of their strength.

The flexible rope to which we have adverted is an essential part of the pulley, which is a small wheel, moving on an axis or pin, fixed in a frame called a block. The circumference of the wheel has a groove for the rope to move in. The pulley is said to be *fixed* or *moveable*, according as its block admits of motion or not. A fixed pulley gives no mechanical advantage, but it enables us to apply force more conveniently, by changing its direction. A man standing on the deck of a ship is able, by means of one fixed at the top of the mast, to raise a weight to that point by drawing downward. In the same manner ore is raised from mines, and water from deep wells. The wheel in the grooved circumference round which the rope passes gives facility to its motion by preventing the necessity of its bending suddenly round a sharp edge, and diminishes the friction by transferring it from the rope to the axis of the wheel. One or more grooved wheels, called *sheaves*, set in a block, and moving freely round an iron axis, constitute a pulley, and the combination of pulley and ropes a *tackle*. If the rope, instead of being attached to the weight, passes through a moveable pulley attached to the weight, and terminates in a hook or ring in the upper block, the tackle becomes an engine by which another advantage is gained. As, in this case, the weight is supported by two parts of a rope, each part sustaining one half, the power necessary to support one of these parts is equal to only one half the weight supported, and, by drawing upon one end of the rope with a power a little greater than one half of the weight, the whole weight will be raised. It is on this principle that advantage is gained by the pulley. If the weight were supported by the four parts of a rope, which passed through two fixed and two moveable pulleys, each part sustaining one fourth of the weight, a power equal to one fourth part of the weight, attached to the free end of the rope, would balance the whole weight, and something more than one fourth would raise it. This advantage is purchased by the space through which the power must move, and the time occupied by the motion. To raise a weight fifty feet, by the combination last mentioned, the power must move over a space of two hundred feet. The pulley is employed to elevate large weights to the tops of buildings, or to upper lofts in store-houses. Its numerous varieties are chiefly used on board ships.

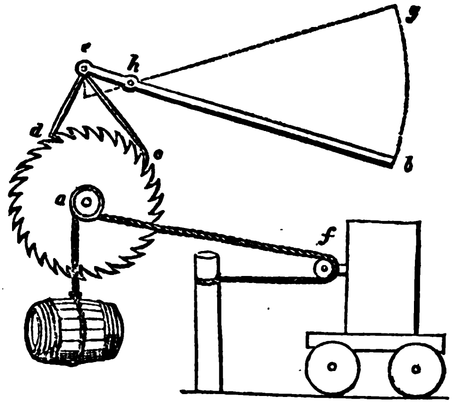
An example of the simplest form of the pulley is given at B A, in which a weight, *w i*, is supported by the hand *p i*. The pulley in this case serves merely to change the direction of motion. If we suppose a second pulley to be attached to the first, as much larger as is shown by the dotted line, or rope *a*, the effect would be doubled, as in the common wheel axle. In figure 2, the same mechanical advantage is obtained by a single pulley. The cord passes round the pulley *a b*, and the weight of two pounds is supported by a power of one applied by the hand at *p i*. To understand this, it will only be necessary to bear in mind that the axis of the pulley to which the weight is really attached is only half the



distance from the flexible fulcrum *b* that the point *a* is to which the power is applied. In the third series we have the same arrangement of the lefthand pulley, but the power is applied through the medium of a roller at top, which is employed only to change the direction of motion.

A great many experiments made by Rondelet have shown that, for most purposes, the best proportions for the wheel of a pulley are, 1, that its diameter should be five times its thickness ; 2, that the diameter of the pin should be one twelfth of that of the wheel; 3, that the wheel should have about one twelfth of its thickness on each side for its play in the block.

In concluding our account of the mechanical powers, it may be advisable to take one machine in which several are combined. The lever *b*, by moving through the arc *b g*, tends to elevate the barrel attached to the cylinder *a*. This is effected by the two arms *d* and *c*, which are attached by a flexible joint to the end. When the end of the lever *b* is elevated, then the arm *d* carries forward the wheel a single tooth. When it is depressed, *c* moves the wheel. The same machine may be employed to do other work, and when combined with a pulley, as at *f*, its power is doubled.



All machines are intended either to produce power, or merely to transmit power and execute work. Of the class of mechanical agents by which motion is transmitted—the lever, the pulley, the wedge—it has been demonstrated that no power is gained by their use, however combined. Whatever force is applied at one-part can only be exerted at some other, diminshed by friction and other incidental causes ; and whatever is gained in the rapidity of execution is compensated by the necessity of exerting additional force. These two principles should be constantly borne in mind, and should teach us to limit our attempts to things which are possible.

1. *Accumulating Power.* When the work to be done requires more force for its execution than can be generated in the time necessary for its completion, recourse must be had to some mechanical method of preserving and condensing a part of the power exerted previously to the commencement of the process. This is most frequently accomplished by a fly-wheel, which is a wheel having a heavy rim, so that the greater part of the weight is near the circumference. It requires great power, applied for some time, to set this in rapid motion, and, when moving with considerable velocity, if its force is concentrated on a point, its effects are exceedingly powerful. Another method of accumulating power consists in raising a weight and then allowing it to fall. A man, with a heavy hammer, may strike repeated blows on the head of a pile without any effect ; but a heavy weight, raised by machinery to a greater height, though the blow is less frequently repeated, produces the desired effect.

2. *Regulating Power.* Uniformity and steadiness in the motion of the machinery are essential both to its success and its duration. The governer, in the steam-engine, is a contrivance for this purpose. A vane or fly of little weight, but large surface, is also used. It revolves rapidly, and soon acquires a uniform rate, which it cannot much exceed, because any addition to its velocity produces a greater addition to the resistance of the air. This kind of fly is generally used in small pieces of mechanism, and, like the heavy fly, it serves to equallize the moving power.

3. *Increase of Velocity.* Operations requiring a trifling exertion of force may become fatiguing by the rapidity of motion necessary, or a degree of rapidity may be desirable beyond the power of muscular action. Whenever the work itself is light, it becomes necessary to increase the velocity in order to economise time. Thus, twisting the fibres of wool by the fingers would be a most tedious operation. In the common spinning-wheel the velocity of the foot is moderate, but, by a simple contrivance, that of the thread is most rapid. A band, passing round a large wheel, and then round a small spindle, effects this change. This contrivance is a common one in machinery.

4. *Diminution of Velocity.* This is commonly required for the purpose of overcoming great resistances with small power. Systems of pulleys afford an example of this.

5. *Spreading the action of a force exerted for a few minutes over a large extent of time.* This is one of the most common and useful employments of machinery. The half minute which we spend daily in winding up our watches is an exertion of force which by the aid of a few wheels, is spread over twenty-four hours. A great number of automata moved by springs, may be classed under this division.

6. *Saving time in natural operations.* The process of tanning consists in combining the tanning principle with every particle of the skin, which, by the ordinary process of soaking it in a solution of the tanning matter, requires from six months to two years.

By enclosing the solution, with the hide, in a close vessel, and exhausting the air, the pores of the hide being deprived of air exert a capillary attraction on the tan, which may be aided by pressure, so that the thickest hides may be tanned in six weeks. The operation of bleaching affords another example.

7. *Exerting forces too great for human power.* When the force of large bodies of men or animals is applied, it becomes difficult to concentrate it simultaneously at a given point. The power of steam, air, or water is employed to overcome resistances which it would require a great expense to surmount by animal labour. The twisting of the largest cables, the rolling, hammering, and cutting of large masses of iron, the draining of mines, require enormous exertions of physical force, continued for considerable periods. Other means are used when the force required is great and the space through which it is to act is small. The hydraulick press can, by the exertion of one man, produce a pressure of fifteen hundred atmospheres, or rather more than twenty thousand pounds.

8. *Executing operations too delicate for human touch.* The same power which twists the stoutest cable, and weaves the coarsest canvass, may be employed to more advantage than human hands in spinning the gossamer thread of the cotton, and entwining, with fairy fingers, the meshes of the most delicate fabrick.

9. *Registering Operations.* Machinery affords a sure means of remedying the inattention of human agents, by instruments, for instance, for counting the strokes of an engine, or of the number of coins struck in a press. The tell-tale, a peice of mechanism connected with a clock, in an apartment to which a watchman has not access, reveals whether he has neglected, at any hour of his watch, to pull a string in token of vigilance.

10. *Economy of Materials.* The precision with which all operations are executed by machinery, and the exact similarity of the articles made, produce a degree of economy in the consumption of the raw material which is sometimes of great importance. In reducing the trunk of a tree to planks, the axe was formerly used, with the loss of at least half the material. The saw produces thin boards, with a loss of not more than an eighth of the material.

11. *The Identity of the Result.* Nothing is more remarkable than the perfect similarity of things manufactured by the same tool. If the top of a box is to be made to fit over the lower part, it may be done by gradually advancing the tool of the sliding rest: after this adjustment, no additional care is requisite in making a thousand boxes. The same result appears in all the arts of printing: the impressions from the same block, or the same copper-plate, have a similarity which no labour of the hand could procure.

12. *Accuracy of the Work.* The accuracy with which machinery executes its work is, perhaps, one of its most important advantages. It would hardly be possible for a very skilful workman, with files and polishing substances, to form a perfect cylinder out of a piece of steel. This process, by the aid of the lathe and the sliding rest, is the every-day employment of hundreds of workmen. On these last two advantages of machinery, depends the system of copying, by which pictures of the original may be multiplied, and thus almost unlimited pains may be bestowed in producing the model, which shall cost ten thousand times the price of each individual specimen of its own perfection. Operations of copying take place by printing, by casting, by moulding, by stamping, by punching, with elongation, with altered dimensions. A remarkable example of the arts of copying lies before the eye of the reader in these pages. 1. They are copies obtained by printing from stereotype plates. 2. Those plates are copies obtained (by casting) from moulds formed of plaster of Paris. 3. The moulds are copies obtained by pouring the plaster in a liquid state upon the moveable types. 4. The types are copies (by casting) from moulds of copper, called *matrices.* 5. The lower part of the matrices, bearing the impressions of the letters or characters, are copies (by punching) from steel punches, on which the same characters exist in relief. And, lastly, the cavities in these steel punches, as in the middle of the letters *a*, *b*, &c., are produced from other steel punches in which those parts are in relief.

Various operations occur in the arts in which the assistance of an additional hand would be a great convenience to the workman, and in these cases tools or machines of the simplest structure come to our aid: vices of different forms, in which the material to be wrought is firmly grasped by screws, are of this kind, and are used in almost every workshop; but a more striking example may be found in the trade of the nail-maker.

Some kinds of nails, such as those used for defending the soles of coarse shoes, called hob-nails, require a particular form of the head, which is made by the stroke of a die. The workman holds the red-hot rod of iron out of which he forms them in his left hand; with his right hand he hammers the end of it into a point, and, cutting the proper length almost off, bends it nearly at right angles. He puts this into a hole in a small stake-iron immediately under a hammer connected with a treadle, which has a die sunk in its surface corresponding to the intended form of the head; and, having given one part of the form to the head by the small hammer in his hand, he moves the treadle with his foot, which disengages the other hammer, and completes the figure of the head, the returning stroke produced by the movement of the treadle striking the finished nail out of the hole in which it was retained. Without this substitution of his foot for another hand, the workman would probably be obliged to heat the nail twice over.

Another, although fortunately a less general substitution of tools for human hands, is used to assist the labour of those who are deprived by nature or by accident of some of their limbs. Those who have had an opportunity of examining the beautiful contrivances for the manufacture of shoes by machinery must have noticed many instances in which the workmen were enabled to execute their task with precision, although labouring under the disadvantages of the loss of an arm or leg.

A similar instance occurs in some of the Institutions for the Blind, where a machine is used by those afflicted with blindness, for weaving sash-lines; it is said to have been an invention of a person suffering under that calamity.

(To be continued.)

INVENTION OF STEREOTYPING.

In a former volume we gave a history of the invention of the Art of Printing: connected with this art, and the most important invention since that of Printing, is, undoubtedly, the Art of Stereotyping. A quarter of a century since, it was scarcely known in this country. At the present time, there are many millions of capital invested in Stereotype Plates, and almost every book published, that will bear a second edition, is stereotyped.

The advantages of this art are very forcibly illustrated in the cases of the "Penny Magazine" originally got up by the Society for the promotion of Useful knowledge in London, and that of our "Family Magazine" in New York. By means of Stereotyping, the London publisher can multiply his "Penny Magazine" to any extent required. After the types are arranged, he takes several sets of plates for his own use, and one set for the United States. He also is enabled to dispose of Stereotype plates of his engravings, for similar works in foreign languages—such as "Le Mosaique," "Le Magazin Pittoresque," etc., in France, and the "Pfenig Magazin" in Germany. The expense of multiplying these plates and engravings is but trifling compared to the cost of the original copy; and the publishers are in this way enabled to furnish their work at an exceedingly low price.

By means of this process, too, we are enabled to publish the "Family Magazine," simultaneously in New York, Boston, Baltimore and Cincinnati; and at all times to furnish back numbers or volumes to any extent that may be required.

The invention of Stereotyping has been claimed by different countries and by different individuals. J. Van der Mey of Holland; Gillet of Strasburgh; Wm. Ged, a goldsmith of Edinburgh; Alex. Tilloch, of Glasgow; Didot and Hernan of Paris, and Cadwallader Colden of New York, have each had the credit of the invention.

We have taken considerable pains to examine the claims of all the above-mentioned individuals, and are quite convinced that J. Van der Mey of Holland, was, at least, the *first* inventor; though it is by no means certain that the others were not *original* so far as they themselves knew. Especially does this seem to us the case with our countryman Cadwallader Colden, whose communication on "a New Method of Printing," addressed to Dr. Franklin near a century ago, (1743,) has led some of our most critical biographical editors to attribute to him the first invention.*

Of all the authorities we have consulted on this subject, we attach the most importance to the excellent work of Isaiah Thomas, entitled, "A History of Printing in the United States," &c,. &c., published in 1810. This work, which was compiled with great pains and expense, will be found to contain a great quantity of useful and important information in regard to the introduction of the Art of Printing into the United States, and the early history of the Colonies.

Of the invention of Stereotyping he gives us the history as follows:—

"By those who are not better informed, this mode of book-making is considered as a modern invention. The friends of the celebrated Didot, in Paris, have ascribed it to him; others have given it to British artists of the present day. The truth is, that it is more than a century since printing from metal plates, or blocks, was practised in Holland. This will appear by the following extract from a work* printed in 1798:—

"'About a hundred years ago, the Dutch were in possession of the art of printing with solid or fixed types, which, in every respect, was superiour to that of Didot's Stereotype. It may, however, be readily comprehended, that these letters were not cut in so elegant a manner, especially when we reflect on the progress which typography has made since that period. Samuel and J. Leuchtman, booksellers at Leyden, have still in their possession the forms of a quarto Bible, which were constructed in this ingenious manner. Many thousand impressions were thrown off, which are in everybody's hands, and the letters are still good. The inventor of this useful art was J. Van der Mey, father of the well-known painter of that name. About the end of the sixteenth century, he resided at Leyden. With the assistance of Muller, the clergyman of the German congregation there, who carefully superintended the correction, he prepared and cast the plates for the above-mentioned quarto Bible. This Bible he published also in folio, with large margins, ornamented with figures, the forms of which are still in the hands of Elwe, bookseller at Amsterdam; also, an English New Testament, and Schaaf's Syriac dictionary, the forms of which were melted down; and, likewise, a small Greek Testament in 18mo. As far as is known, Van der Mey printed nothing else in this manner; and the art of preparing solid blocks was lost at his death; or, at least, was not afterward employed.'

"The next person who printed in this way was William Ged, an ingenious goldsmith in Edinburgh. He began to prosecute this business about the year 1725. His method was, to set up common types into pages of the work intended to be printed; and from those pages to form moulds to cast the blocks, which, when cast, were fitted for the press. He removed from Edinburgh to London, and formed a partnership with Thomas James, then the most celebrated, if not the only type-founder in that city; and, with William Fenner, a stationer, who was to furnish money, on condition that he should receive one half of the profits. In 1730, these partners applied to the university of Cambridge, England, for the privilege of printing Bibles and Prayer-books in this way, and obtained it. They expended large sums of money in attempts to bring their plan to perfection. They completed the Prayer-book in 8vo. and in 12mo. and had the larger part of the Bible prepared on blocks, when they relinquished the undertaking. It seems that one of the partners became hostile to the plan, and, in connivance, with the workmen, contrived to have the work executed very erroneously; and the pressmen designedly battered the forms. The books, in consequence, were suppressed by authority, and the plates were sent to the king's printing-house, and from thence to the foundry, where they were melted down. Ged returned to Edinburgh, much disappointed, where he printed and published in 1736, by a subscription from his friends, an edition of Sallust from cast plates. He afterward manufactured plates for Sougal's 'Life of God in the Soul of Man,' which was printed in 12mo., on a writing-pot, with this imprint, 'Newcastle: Printed and sold by John White, from plates made by William Ged, Goldsmith in Edinburgh, 1742.' He died in 1749. His son, who was bred a printer, published in 1751, proposals for renewing the Stereotype printing; but not meeting with success, he went to Jamaica, and died there.

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* Dr. J. W. Francis, of New York, distinguished alike in the Republick of Letters, as in the field of medicine, is clearly of opinion that Dr. Colden was the first inventor of Stereotyping.

* "Niew Algemeen Konst en Letter Bode," 1798. N. 232. Vide Philosophical Mag. Edited by Alexander Tilloch, Esq. Vol. X, published in London.

"The ingenious and learned Alexander Tilloch, of Glasgow, when he resided in that city about thirty years since, is said to have made a *second* discovery of the art of Stereotype printing; and declared himself ignorant of its having been previously practised, or even attempted. Until he had nearly completed the invention, he believed it was entirely his own, when he discovered, that fifty years before, Ged had printed several works from Stereotype plates; and he further ascertained that, near fifty years before Ged, Stereotype printing had been practised by Van der Mey, in Holland. 'A knowledge of these facts,' says Tilloch, in a treatise he wrote on the subject, 'lessened the value of the discovery so much in my estimation, that I felt but little anxiety to be known as a *second* inventor.' He, however, pursued the business. Foulis, printer to the university of Glasgow, assisted him. They printed two or three small works from the plates which they made; and sold the editions to the trade, without any intimation of their being executed out of the common way. They then took out patents for Stereotype printing in England and Scotland; and, in 1793, they printed Xenophon's Anabasis, in Greek, in that way. They nearly completed the plates for several of the English poets; but that work was delayed by circumstances which induced them to set the business aside, and it never was resumed.

"Some years after this, Didot, a very celebrated printer at Paris, revived this art of founding pages; and applied it, in the first instance, to logarithmick tables, for which it is well adapted. He then proceeded to print some of the classicks, and other works, all of which do him much credit; being executed with great neatness and accuracy.

"About the same time, Lord Stanhope, a British nobleman, having received from Tilloch some information respecting the method of casting plates for letterpress, undertook to revive, perfect, and establish Stereotype printing in England. After two years of application, with the aid of Foulis of Glasgow, who had assisted Tilloch, and Wilson, an ingenious printer in London, his lordship succeeded, not only in casting plates with facility, but also, in the construction of a press more suitable for Stereotype printing than that now in common use."*

This extract will settle the claims of several of the individuals enumerated in the foregoing paragraph. Early in the last century, one Gillet of Strasburgh printed a bible from plates similar to the Stereotype plates of the present day. His moulds were made of fine clay and a particular kind of sand found only in the neighbourhood of Paris. Though this art was invented and practised by several individuals early in the eighteenth century, no considerable progress was made in it until the time of Didot the elder of Paris, who was eminently successful.

The claims of Dr. Colden come next to be considered. From the communication to Dr. Franklin before referred to, and published some years since in the "American Medical and Philosophical Register," edited by Drs. Hosack and Francis, we make the following extract, which gives the outline of the plan of the "*new method of printing*," proposed by him:—

"Let there be made of some hard metal, such as copper or brass, a number of types, or rather matrices, on the face of each of which, one letter of the alphabet is to be imprinted *en creuse*, by a stamp, or such other method by which the matrices for founding types are commonly made. They must be all of the same dimension, as to breadth and thickness, with that of types, but half their length seems sufficient. Their sides must be so equal and smooth as to leave no vacuity between them when joined. There must likewise be a sufficient number of each letter or character, to compose at least one page in octavo, of any book.

"These matrices, I suppose, may be cast in a mould, or plate of copper, may be divided exactly into squares, and the letter or character be stamped into the middle of each square, and the squares afterward cut asunder by a proper saw. The best method of making these will be easily discovered by those whose business it is to make founts for printing types.

"When a sufficient number of each letter and character is obtained, they are to be placed in the same manner that types are, when composed for printing, only that they must all stand directly as they are read, and as they will appear afterward on the paper.

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* The process of Stereotyping as generally performed, at the present day, is essentially, what has been denominated the "Stanhope plan."

"The composure of one page, after it is carefully corrected, is to be placed in a case or mould, fitted to it, of the length and breadth of the page, and of such depth as to cast a plate a quarter of an inch thick, which will perfectly represent a page composed in the common manner for printing.

"As to the art of casting the plate perfect, founders and type-makers must be consulted; for the composition of the metal, and for the flux for running it clean and clear, so that no vacuities be left: for which purpose, I am told, that the funnel, by which the melted metal is poured in, being made large, and the filling it with the melted metal after the mould is full, is of use to make the letter everywhere full and complete. For, by the weight of the metal in the funnel, the liquid metal in the mould is pressed into every crevice. The funnel's extending the whole length of one of the sides, gives, likewise, free vent to the air.

"Or, after a page shall be composed as before-mentioned, and the types and matrices well secured in a frame upon a strong plate, they may, by a screw, be pressed upon a sheet of melted lead, and thereby a plate of lead be procured, representing as the former a page composed of types for printing. Which of the methods are most practicable artists can best determine.

"After the page shall be thus formed the matrices may be loosened and dispersed into their proper boxes, and may serve for as many other pages as types in common printing do.

"When a number of pages, sufficient for a sheet, are thus made, they may be carried to any printing-press, and such a number of sheets as shall be thought proper be cast off, and then be laid by till more copies are wanted.

"I choose an octavo page, because, if the page-title and page-number be left out, as likewise the directions and signatures at the foot of the page, by joining two pages together, it may be made a quarto, or by joining four, a folio. Thus several editions in octavo, quarto, and folio, may at once be made, to suit every buyer's humour.

"The page-titles, number, and bottom signatures may be cast in small moulds apart, and joined, as may be proper.

"The most convenient size of a page is that of small paper, so as to fill it up, and to leave very little margin; then by adding the page-titles, or marginal notes, or notes at the bottom, all cast in frames separately, the larger paper may be sufficiently filled.

"I believe that this method of printing, every thing considered, will not be more chargeable than the common method. A thousand, or some thousands sometimes, of copies, are cast off at once in the common method, and the paper and pressman's labour of what is not speedily sold may, or must lie dead for some years, whereas in this method, no more need be cast off at a time than may well be supposed to sell speedily. If I be not mistaken, the metal necessary for one sheet will not exceed the value of four hundred sheets of paper, and in the common method several hundred sheets lie useless for, sometimes, many years. If the book should not answer, there is a great loss in the paper, whereas the metal used in this method retains its intrinsick value."

Dr. Colden has here very clearly described the Stereotype process; and for all that can be known at this day to the contrary, he was not aware that anything of the kind had ever been attempted before.

About the year 1775, (says Isaiah Thomas,) an attempt was made at Stereotype printing by Benjamin Mecom, printer, nephew to Dr. Franklin. He cast the plates for a number of pages of the New Testament, but never completed them. He was skilful but not successful.

(To be continued.)

THE CHERUB WATCHER.—By J. Saurin Norris.

The last lone star that lingers on the sky,
Has veiled its lamp—the morning's ruddy glow
Already bathes the mountain's crest in fire,
And all things don the livery of the day;
Yet from yon half-oped casement faintly gleams
A sickly taper's light:—who watches thus
With such intensity of care that e'en
The night may wane unknowingly? What eye
Has failed to note the waking blush of morn?
What ear is closed to all the gladsome sounds
That herald in the new born day?
With noiseless step approach,
And to each query find a mute reply—
For in that silent hall no sound is heard,
Save the quick trembling of an infant's breath—
A mother watches o'er her dying babe.
Its hour has come, and she, whose chief delight
Was found while gazing on its sinless brow,
To seek some promise of the future's good,
Now bends in speechless agony to mark
The closing scene of all her fondest hopes:—
Unutterable wo is heard ev'n in
The very silence of that mother's grief.
One shivering sigh escapes, and the closed lids
Are slowly raised—life lingers in that gaze,
Which fondly seeks the parent eye; and words
That have no voice, are breathing on the air,
To bid the mother meet her child in heaven.
In after years,
Say not that childless mother is alone.—
Have ye not mark'd her busy hand to rest,
Amid the task by love itself imposed?
Ev'n as she listened to the step of him
Who is her bosom's lord, have ye not seen
Her gaze abstracted—her attention gone?
A silver voice was whispering in her ear,
"*Mother! dear mother, come!*"———
There is a rapt communion of the soul,
Which time, nor space, nor death itself, can mar;
Upon the young wind's gentlest breath 'tis borne—
Upon the sunbeam rides—and in the storm,
Distinctly whisp'ring, tells its tale of love.
And such the mystick intercourse she knows
Who hath a babe in heaven. Its spirit-voice
Is heard alike in joy, or grief, by day,
By night—in dreams, or waking, still it sighs,
"*Mother! dear mother, come!*"

* * * * * *

Around the azure portals of the sky,
Lingers a cherub form. Amid the tones
Of angel minstrelsey its voice is hush'd;
Heaven's brightest glory has no power to charm
Its gaze, which scans the deep profound of space,
And watchful seeks earth's distant darkling orb.
What hath a denizen of heav'n to hope
Beyond the bliss its realms of glory yield?
What form of beauty, or what sound of joy
Is wanting there which other worlds can lend?
Hark! on the odour-laden zephyr's wing
There comes a gush of witching melody,
Whilst on the farthest precinct of the sky,
Hovers a seraph band. Amid the train,
A free unfettered spirit cleaves the air,
And in her upward flight outstrips the storm.
Again is heard triumphant harmony—
Yet 'mid its tones that cherub knows a voice,
More grateful to its ear than murm'ring streams
Which pour their floods of life o'er plains of bliss—
"*My child I come!*"—Heav'n hath no more to give.

GEOLOGICAL REPORT

OF THE STATE GEOLOGIST OF INDIANA.

We make room for the concluding chapter of this very interesting Report, which is the summing up, under the title of

PRACTICAL INFERENCES.

The practical and very important inferences from the foregoing Report, may be summed up in a few words.

Three geological formations exist in Indiana. 1. A bituminous coal formation, occupying that portion of the state west of the second principal meridian; 2, a limestone formation (similar to the mountain limestone of European geologists,) prevailing in the counties east of that meridian; 3 a diluvian, consisting of deposites of clay, sand, gravel, and boulders; overlaying, and, in many places, covering up, the two other formations, to a greater or less depth, particularly in the northern part of the state.

Now as in this country no perfect seams of bituminous coal are found associated with calcareous deposites, similar to those of middle and eastern Indiana, the geologist can confidently predict, that it is a waste of time and labour to search for coal in any part of the state east of this second meridian; for instance, as has been done, in the neighbourhood of the black bituminous aluminous slate, which is represented on the map stretching north in a narrow band, commencing at New Albany, in Floyd county, and extending through part of Clark, Scott, Jennings, Bartholomew, Decatur, and probably beneath the diluvium, in a northerly direction, toward Elkhart.

If we were to speculate from geological observations, on the future condition of Indiana, we should say, that the western counties are destined to become, one day, the chief manufacturing counties; since, with a few exceptions, all large manufacturing towns and districts are situated on the coal formation.

The freestones of this formation being often soft and fissile, owing to the existence of mica disseminated in layers through their substance, and the ferruginous cement which unites their particles, being liable to undergo alterations by the action of the atmosphere upon it, a careful selection by the builder is always necessary. In several places, particularly toward the base of the formation, or near its eastern boundary, as at Attica, Williamsport, on Pine creek, and near the French lick, with a little care, freestone, white and fine grained, and excellently suited for architectural purposes, may be readily obtained. In character and geological position it resembles the celebrated Scotch freestone, of which the new town of Edinburgh and a portion of the town of Glasgow are built.

At New Harmony there is a quarry of freestone, yielding rock that has stood the test of twenty years; yet it is by no means equal to the strata above alluded to, in our eastern counties.

A freestone of a very fine grain and white colour is quarried at the French lick, west of Paoli. It is manufactured into whetstones, that answer admirably for putting a fine edge on tools, and for polishing. They are exported to all parts of the Un
States.

Good grindstones are also manufactured fro
similar stratum of these freestones, of a coa
grain.

The eastern boundary or base of the coal for
tion is the most likely place to afford salt-water;
we find the most productive salt-wells throug
the western country occurring in the inferiour m
bers, the coal formation. Thus, should sympt
of salt water make their appearance in the coun
of Perry, Spencer, Dubois, Martin, Davies, Gr
Owen, Clay, Putnam, Montgomery, or Tippeca
the encouragement to make a search would be gr
er, than if found elsewhere in the state.

Salt, however, is not, strictly speaking, cons
in its geological position. In Europe, it usually
curs in the new red sandstone—a formation hig
and of more recent origin than the bituminous
formation; while, on the Holston, a tributary of
Tennessee river, there is a fine salt deposite,
rounded by gypsum of plaster of Paris, lying on
grauwacke formation.

Two or three salt-wells have been sunk in
knobs east of Bloomington, through the silic
beds belonging to the sub-carboniferous group.
salt is of excellent quality; but the water has h
erto proved too weak to afford a fair profit.
boring after salt is, in truth, at all times atten
with considerable uncertainty.

Quantities of argillaceous iron-ore—from wh
in Great Britain, six hundred thousand tuns of
are annually obtained—occur in some of the c
slates of the bituminous coal formation of India

Some of the clay-slates answers well for
brick. That now excavated near Troy is to
manufactured into fire-brick for sale—an impor
article of commerce, in a country where steam-
gines are so extensively used, and indispens
where furnace operations are carried on to any
tent.

Some of our clays in the coal formation ans
well for the manufacturing of stone-ware and
pottery-ware. Such wares are now manufact
from them at Troy.

Since I first called the attention of the proprie
to the deposite of the hydrated brown oxide of
near the falls of Eel river, examinations have b
made, by digging in four or five different pla
ore has been struck in all of them; many tuns h
been thrown up, and the prospects are so enco
ging, that the proprietors of the falls are now end
ouring to form a company, to erect a furnace:
commence, on an extensive scale, smelting
ore.

Sand-stone being the predominating rock in
coal formation, and the greatest part of the soi
these western counties being formed from its di
tegration, we find it generally of a sandy charac

The dip and position of the various beds bel
ing to coal-measures are generally constant, un
where, from the protrusion of basalt or of gr
stone, those volcanick disturbances, called by
miners, "*faults*," "*troubles*," or "*dikes*," have
turbed the regularity of position. If, then, the
eral dip and order of succession of the strata ca
ascertained, and these should appear to be free
faults of material undulation, a pretty correct

mate might be formed of the depth of the various seams of coal and other strata in different parts of the coal-fields of Indiana.

Most of the limestones in the oolitick series—that is, those occurring in the counties of Crawford, Orange, Lawrence, Monroe, Owen, and Putnam—make good building materials. The encrinital limestones in Harrison, Washington, Jackson, Bartholomew and Morgan counties, are also very suitable for that purpose; but the silicious strata, or sand-rocks, in these counties are generally soft and crumbling, and by no means durable. The only use that the black bituminous aluminous slate, occurring in the sub-carboniferous group can be put to, is for the manufacture of alum. The sub-carboniferous group, affords a water-lime, which appears to be a compound chiefly of limestone and clay, with some bituminous matter. It is associated with the black bituminous slate above-mentioned. Some of the limestones in its neighbourhood, for instance, those rocks which are excavated a, the top of the hill behind Madison—contain green earth, and some are impregnated with bitumen and sulphuret of iron. In making a selection of building materials in such strata, care should be taken not to use any such, unless their durability has been well tested; for they are generally liable to decay.

The fossilliferous limestones of east Indiana, viz. those found in Jefferson, Switzerland, Dearborn, Ripley, Franklin, Fayette, and Union counties, are durable rocks, and some of them make beautiful marbles.

The sub-carboniferous formation of Indiana is identical with the formation occurring in middle Tennessee, in which the enormous deposites of the hydrated brown oxide of iron, constituting so much of the mineral wealth of that state, are found.

The deposites of this kind of ore, in Indiana, however, although found in the same formation, are not associated with exactly the same strata. In Tennessee, they are in the silicious strata, just above the encrinital limestone; those at present discovered in Indiana are either resting on the oolitick series of limestones, or near the bituminous aluminous slate.

The soil in Crawford, Lawrence, Orange, Monroe, Owen, and Putnam counties, being formed chiefly from the oolitick limestones, has a calcareous character, and is admirably adapted for the growth of grasses.

Clay will be found to predominate in the soil of the counties of Floyd, Clark, Scott, Jennings, and parts of Bartholomew, Decatur, Shelby, Johnson, Marion, and Hancock; because the soil of these counties is underlaying by clay slates. Hence we find the beech-tree, which delights in a clayey soil, there growing luxuriantly.

The soil of Jefferson, Switzerland, Dearborn, Ripley, Franklin, Fayette, Union, and parts of Decatur and Rush, being founded upon alternating strata of clay and limestone, must partake chiefly of these two earths. This soil is also well adapted to the growth of grasses.

The soil of the northwestern counties appears to be silicio-calcareous sand, resting upon a clay bottom. This I conceive to be the reason why it is so much more productive than its external appearance promises. These points, however, I intend more fully to verify, by analysis, so soon as I can get samples of all the various soils. As yet, my opinion has been formed chiefly from ocular observation, and reasoning from general principles.

The water in the northwestern counties is strongly impregnated with carbonick acid. This, acting as a solvent upon limestone and the protoxide of iron, dissolves whenever it meets with them in its passage to the surface. And thus we find these waters often highly charged with these two ingredients, forming calcareous and chalybeate springs. As they lose very soon, by exposure to the air, the excess of carbonick acid, which acts as a solvent of these ingredients, and as iron is brought also, by the same exposure to air, to a higher degree of oxidation, and therefore to a more insoluble form, these two causes acting together soon produce deposites of calcareous tufas and bog iron-ore, so frequently found in that country. The quantity of bog iron-ore is, therefore, continually on the increase.

The greater part of Indiana must have been, at some period of the earth's history, covered by an ocean; for most of the fossils in the limestones are of marine origin.

None of the precious metals will ever be found in Indiana, unless in minute portions in boulders, or in small quantities in combination with other metals; because the primitive and grauwacke formations, in which alone productive mines of gold and silver-ore occur, do not exist in Indiana. It is true that, in some rare instances, silver is found as a sulphuret and as red silver-ore, in such formations as exist in the western country; but I have seen no symptoms of any such in our state. The same may be said of bismuth, tin-ore, and native arsenick. The only metals which we need look for, are iron, lead, antimony, manganese, zinc, cobalt, and possibly some varieties of copper and arsenick-ores.

It is not likely that anthracite coal will ever be found in Indiana, because that mineral is usually found in the primitive and grauwacke formations.

Several detached pieces of native copper have been found in the state, one weighing five pounds, but, from the nature of the ore, its occurring in washed gravels, and only in isolated pieces, I have reason to believe that they do not originate in the state. I may add that the Kupferchiefer of the German miners yields, at the mines of Mansfield, in Thuringia, an abundant supply of copper-ore. This copper-slate is found at the bottom of the new red sand-stone formation, which overlies the bituminous coal formation, and copper-ores have been found in the carboniferous and mountain limestone; there is, therefore, a possibility of discovering workable copper-ore in the formations of Indiana.

The fertility of the soil of Indiana is universally admitted; yet few are aware that it arises mainly from its geological position. It is well known to geologists, that that soil is the most productive, which has been derived from the destruction of the greatest variety of different rocks; for thus only is produced the due mixture of gravel, sand, clay, and limestone, necessary to form a good medium for the retention and transmission of the nutritive fluids, be they liquid or aëriform, to the roots of plants. Now, Indiana is situated near the middle of the great valley of northwestern America, and far distant from the primitive range of mountains; and her soil is accordingly formed from the destruction of a vast variety of rocks, both crystalline and sedimentary, which have been minutely divided and intimately blended together by the action of air and water. It has all the elements, therefore, of extraordinary fertility.

DAVID DALE OWEN,
Geologist of the State.

BIOGRAPHY.

SKETCH OF THE LIFE AND CHARACTER OF THE LATE HON. CADWALLADER COLDEN.

In the Biographical memoir of the late lieutenant-governour inserted in a preceding number of the Family Magazine, we detailed some of the prominent facts connected with the family of the subject of the present article. The venerable lieutenant-governour reared a family of two daughters and three sons. His daughters were Alice, married to Mr. Willet; and Elizabeth, married to Mr. Delancy. His sons were Alexander, Cadwallader and David, each of whom at different times, acted as surveyor-general. They were all prominent men in the colony of New York—David, the youngest son, and father of Cadwallader, whose career it is purposed carefully to set forth on this occasion, was a native of the city of New York, and born in 1735. He received a good education, excelled in mathematicks and natural philosophy, and was a correspondent of Dr. Franklin, in whose works some of his letters appear. He died in London, in 1784, leaving one son and four daughters, and the reputation of an excellent character.

Cadwallader D. Colden, whose publick services his native state will long remember with high consideration, was born at Spring-hill, near Flushing, in Queen's county, Long Island, on the 4th of April, 1769. He was educated in part at home, by a private tutor, and attended a school at Jamaica, Long Island. In the spring of 1784, he embarked in company with his father for England, where he attended a classical school in the neighbourhood of London until the autumn of 1785, when he returned to New York. He then commenced the study of the law with the eminent counsellor Richard Harrison, but family business making it necessary for him to visit the British province of New Brunswick, and continue there for some time, he pursued his legal studies there: and in 1789, returned to the state of New York, and completed his professional education with the late Mr. Van Schaick of Kinderhook. This distinguished civilian was preceptor of many of our most eminent professional men in jurisprudence.

In the January court-term 1791, Mr. Colden was licensed as an attorney; and from Governour George Clinton he received a commission as a publick notary. Mr. Colden had practised law in the city of New York but a short time, when he removed to Poughkeepsie, in the county of Dutchess. He remained there pursuing his profession with great industry and success, until the year 1796, when he again returned to the city of New York, and resumed his station at the bar.

He about this time received the appointment of district-attorney, and by his zeal, talents and industry, laid the foundation of his future fame and success. His excellent biographer in the New York Mirror, remarking on this period of his life, observes, "Mr. Colden's intense application to business, in the course of a few years, most seriously impaired his health, and he embarked for France in the spring of 1803, as his friends supposed in the last stage of consumption. A residence of about eighteen months in France and Switzerland, and other places on the continent, restored him to health; and he returned home at the close of the year 1804, and found his clients and friends already waiting to give him their happiness and offer their congratulations." The same candid writer farther very honestly and frankly remarks: "For a young man to attain distinction at the New York bar, when his competitors were such men as Richard Harrison, Samuel Jones, sen., Alexander Hamilton and Brockholst Livingston, was no easy task. Mr. Colden, however, thoroughly disciplined his vigorous and active mind, grappled with difficulties which beset him, and overcame them. His success was flattering in the extreme; for it was not many years before he stood as a commercial lawyer at the head of his profession, while in other branches of it he always ranked among the first." As an evidence among many others which might be cited, of the great amount of business which poured in upon him, it has been stated, that he has argued every cause on one side or the other, that was heard in the supreme court for a week: he also had at some of the New York circuits, sixty or more causes.

It deserves to be recorded to his high honour, that his system of law-ethicks to which he rigidly adhered, was of the purest kind. His intercourse with his professional brethren was courteous and fraternal. He treated his juniors with urbanity and kindness, and never evinced toward his compeers or seniors, the feeling of envy or uncharitableness. His professional fame, therefore, was a brilliant one, and such as few comparatively ever obtain. Soon after he began to practice in New York, he became connected with the Manumission Society, and was for a long time its President. On every requisite occasion, he lent to it his powerful professional services, with a total disregard of all sordid results. As a friend to the young aspirants to professional distinction, to genius in the arts or sciences, and to all who were governed by a laudable impulse, he always liberally imparted his councils, his hospitalities, and if requisite, pecuniary aid. What he has said of his intimate friend Fulton, in his biography of this eminent man, may with the strictest truth be said of himself. "In all his domestick and social relations, he was zealous, generous, liberal and affectionate. He knew of no use for money but as it was subservient for charity, hospitality and the sciences."

His biographer, to whom we are so largely indebted for the materials of this sketch, thus adverts to the labours of Mr. Colden, which were more particularly of a publick nature. During the late war with Great Britain, Mr. Colden's professional engagements (says he) 'were so numerous, that it was conceded by every one conversant with the subject, that his business was worth more than that of any other member of the profession in the state. He relinquished the most of it, however, that he might devote a portion of every day to military service. He commanded a regiment of volunteers, and was extremely active and useful in helping in the erection of fortifications for the defence of the city. His time, his influence, his pen and his money, were tendered to his country. His example was of signal benefit: so much so, that the patriot Tompkins spoke of it with a warmth of feeling, and an earnestness of manner, that showed that he considered Mr. Colden as one of his most efficient coadjutors during that continual and alarming crisis in our affairs. In 1818, he was elected to the House of Assembly, and during that year was also appointed mayor of the city of New York. It was then part of the duties of the mayor to preside in the municipal courts, and although he was the immediate successor of De Witt Clinton in that office, his opinions and conduct as a judge, fully sustained the high reputation of the court. In 1822, Mr. Colden was elected to Congress, and proved himself a useful and distinguished member of that body.

In 1824, he was elected to the Senate of the state of New York, which office he held for three years, when a regard to other paramount duties led him to resign. As a debater in that very respectable body, he was always listened to with attention, and his opinions as a member of the court for the Correction of Errours, are characterized by a vigour, clearness and legal discrimination, that entitle them to peculiar consideration. Untiring industry and patient research, marked him in all his proceedings, equally in the several legislative bodies of which he was a member, as in the severest responsibilities of his private professional business.

The subject of education was one on which Mr. Colden bestowed much reflection, and he lent through his whole life his aid to all those institutions, which had for their object the moral and intellectual culture of youth. The publick-schools in the city of New York, can number him among their most active and efficient founders. He was conspicuous among the most active in devising a plan for the *reformation of juvenile delinquents*, and was afterward president of the society incorporated for that important object. He reflected much on the subject of proper discipline, and was instrumental in making many valuable suggestions for the reformation of convicts. For many years he was one of the governours of the New York hospital.

Various and serviceable as his efforts for the benefit of his native state and country thus appear, he challenges our approbation for his performance of still more important acts. He is recognised as one of the earliest and most efficient promoters of that great system of internal improvement which is now the pride and boast of the state of New York.

We find his name recorded in the list of names affixed to the celebrated memorial on the subject bearing date February, 1816. The great meeting on that occasion was held in the city of New York, and Mr. Colden was on the committee of correspondence. In the history of the Erie canal, published by order of the Legislature, we find his name often recorded as associated with measures eminently conducive to the accomplishment of that vast undertaking. After the completion of the canal, he wrote as is well known, the memoir on the subject, which was published by the common council of the city.

His publick services after he withdrew from the Senate, in 1827, were next devoted to superintending the construction of the Morris canal, which connects the waters of the Delaware river with the waters of the bay of New York. It would require a large space to detail the many discouraging and formidable difficulties he had to encounter in the work: suffice it to say, he on this occasion, as on every other of his life, was not intimidated, but steadily persevered to the satisfactory completion of the great task: it is familiarly known that the Morris canal has demonstrated the practicability of using planes for locks.

The records of jurisprudence must be consulted in order to ascertain the nature of his legal opinions and decisions. His Life of his friend, Robert Fulton, is his most extensive literary enterprise. In this volume, which was read by him before the New York Literary and Philosophical Society, and published by that association with the laudable intention of erecting some memorial in honour of this eminent and successful experimental philosopher, Mr. Colden has evinced the warmth of his affection, and treated with a judicious consideration the generous and patriotick services of that illustrious man.

The elaborate document which he drew up at the request of the corporation of New York, embracing the origin, progress, and completion of the great canal which connects Lake Erie with the Hudson river, will ever be coveted by the historian who seeks for authentick knowledge on matters of that nature. The last effort of his pen, was a letter on a singularly interesting subject, the insanity of the late famous orator of France, Count St. Jean D'Angelly, an exile in America, in 1817. This paper of peculiar importance to the medical jurist, may be found in the life of the late Thomas Eddy, recently published by Col. Knapp. Mr. Colden contemplated the publication of the writings of the late Lieutenant-governour Cadwallader Colden, in a series of volumes, with an original life drawn from materials in his possession: but he made only partial advances in the undertaking.

Mr. Colden died on the 7th of February, 1834, at his house in Jersey city, which he had made his residence for several years. He was married to Miss Maria Provoost, second daughter of the Right Rev. Samuel Provoost, D. D., the first protestant bishop of New York. By this lady, who died in 1837, he had one son, David C. Colden.

The writer of Mr. Colden's life, to which we have already more than once referred, and to whom we are so largely indebted for this account, thus justly sums up his character: "The ruling, paramount, and impelling motive seemed to be, to make himself useful to his fellow-men. An allusion has already been made to the ardour and fidelity with which he discharged his professional duties; and these were also the characteristicks of all his other labours. Whether he was in the service of his friends, his clients, or his country, he evinced a disinterestedness and devotion, rarely if ever surpassed. The prominent traits in his character, cannot, perhaps be better designated, than by applying to him what has recently been said of another, that he possessed an 'energy, activity, and philanthropy, which led him to regard none of the great concerns of mankind as foreign to himself!'

"He never condemned anything because it was new, for he disclaimed all connexion with the paradoxical set of men, who seem to hold, that an old errour is better than a new truth. If he were sometimes called a projector, let it be borne in mind, that all his projects had for their object the benefiting of others rather than himself. As a jurist and civilian, he ranked with men whose professional fame we justly prize as a part of the moral property of the state. As a theoretical mechanick and engineer, his enjoyment of the confidence, and sharing in the consultations of Fulton, attest his powers. The numerous institutions he was instrumental in forming and sustaining, added to his deeds of charity, give full proof of his claims to the character of a philanthropist. In the domestick and social relations of life, he ever evinced an affection and kindness that rendered him a safe pattern for imitation. As a publick speaker, he infused into his discourses a pathos and force that seized and held the deep attention of his auditors."

A beautiful marble monument has lately been erected in Grace church, New York, to the memory of this distinguished and lamented citizen. It is placed under the south gallery, and nearly opposite to one of Frazee's earliest works of the same kind, the monument of Mr. Colden's friend and rival at the bar, the eloquent and noble-minded John Wells.

The inscription was written by the Hon. Gulian C. Verplanck; it is as follows:—

"TO THE MEMORY OF CADWALLADER D. COLDEN.

For several years Mayor of this City, a Senator of this State,
and one of its representatives in the Congress of the U. S.
His talents and publick services added lustre
To these and many other
Honours and trusts bestowed upon him by his native city.
He was alike eminent for legal learning and eloquence,
For ardent love and pursuit of general science,
And for the successful application of all his acquirements
To the best interests of his country.
As his Philanthropy and Patriotism
Commanded the confidence and atttachment of his fellow-citizens
So his Kindness, Frankness, and Generosity
Won the warm affections of his family and of numerous friends;
By one of whom, who had witnessed most nearly,
And, therefore, best estimated his worth,
This monument is erected."

SUPPOSED FALL OF SULPHUR.—Captain Hufty communicated to the Academy of Sciences an account of a singular phenomenon which happened at Olerand, in the department of the Basses Pyrenees. On the twenty-eighth of April 1835, there occurred a heavy fall of snow, which next day was covered with a fine yellow dust, having all the appearance of sulphur. The only probable explanation which can be given of this phenomenon is, that the dust must have been the pollen proceeding from the blossoms of numerous pine trees in the vicinity, and which flower at that season. This pollen is of a highly inflammable nature, and might easily be mistaken for sulphur.

FROM THE NATIONAL GAZETTE.

[Communicated.]

MESSRS. EDITORS.—In your Gazette of the sixteenth instant, I observe three verses of an Ode, which, fifty years ago, was familiar to me. It was often sung in social circles where I was, and also in church. It was written, as I always understood, by Nathaniel Niles of Norwich, in Connecticut, who afterward settled in the State of Vermont, and thence was sent a member of Congress, in the days of John Adams's administration. It was written soon after the battle of Bunker's Hill; we always called it *Niles's Pindarick Ode*, and was sung to the tune of *Bunker's Hill.*

Nathaniel Niles was, I believe, the father of the first excellent editor of NILES'S REGISTER, and grandfather of the present editor.

This poem, song, or Pindarick ode, was written on my memory more than fifty years ago, whence I quote the following copy, which I believe is correct. And if you think it will have the effect of reviving some thoughts of *those days*, I hope it will find a place in your patriotick Gazette.
E.

Why should vain mortals tremble at the sight
Of Death and destruction in the field of battle,
Where blood and carnage clothe the ground in crimson,
Sounding with death-groans?

Death will invade us by the means appointed,
And we must all bow to the king of terrours;
Nor am I anxious, if I am prepared,
What shape he comes in.

Life for my Country and the cause of Freedom,
Is but a trifle for a worm to part with:
And if preserved in so great a contest,
Life is redoubled.

Infinite Goodness teaches us submission
Bids us be quiet under all his dealings,
Never repining, but for ever praising
God our Creator.

Well may we praise Him, all his ways are perfect,
Though a resplendence infinitely glowing
Dazzles in glory on the sight of mortals,
Struck blind by lustre.

Good is Jehovah in bestowing sunshine,
Nor less his goodness in the storm and thunder;
Mercies and judgements both proceed from kindness,
Infinite kindness.

O then exult that God for ever reigneth,
Clouds that surround Him hinder our perception;
Bind us the stronger to exalt his name,
And shout louder praises.

Then to the wisdom of my Lord and Master,
I will commit all that I have or wish for,
Sweetly as babes sleep will I give my life up
When called to yield it.

Now Mars I dare thee, clad in smoky pillars;
Bursting of bomb-shells roaring of the cannon,
Rattling of grape-shot like a storm of hail-stones,
Torturing ether.

Up the bleak heavens let the spreading flames rise,
Breaking like Etna through the smoky columns,
Lowering like Egypt o'er the falling city,[*]
Wantonly burnt down.

PETER PARLEY'S *Universal History, on the basis of Geography.* For the use of families. In two volumes. Illustrated with Maps and Engravings. BOSTON: American Stationers' Company: NEW YORK: S. Colman. 1837.

THE great popularity and extensive sale of the earlier books for children of the celebrated "Peter Parley," induced many other individuals to get up books, aping the style of the aforesaid Peter, and using his name, until the country was swarmed and sickened of the very name of Parley.

It is said, that the good old man, when he found himself surrounded by more grandchildren and great grandchildren, than ever before fell to the lot of mortal man in the natural way—and what was worse, many claiming paternity that he would not own—forswore the goosequill, and denied his name.

We sympathized deeply with the old man in his misfortunes, and lest we might by some chance be imposed upon by some spurious Parley—we eschewed the whole, every thing that bore the name.

But the veteran has forgotten his vow and come forth again, with the volumes before us, and as they come direct from him, *himself*, we will e'en take him by the hand, and devote a page or two, to give our readers some idea of his "Universal History."

The plan of the work will be understood by the following extract from the preface:—

"So I have written my book, and the world may take it for what it is worth. I have based History upon Geography, illustrating one by pictures, and the other by maps. I have written for the *Young*, but as I desire that these volumes may not be forced upon anybody as a monitor or master, I say in the titlepage that it is designed for families. I wish it to be permitted to enter the family circle, and take its chance to make its way. If it is placed, not as a task-book, but rather as a story-teller, on the table, perhaps the children may patronise it; perchance the parents may deign to look into it. The chapters are short, and questions are added at the end. I do not ask any one to read these questions, but if parents, brothers, or sisters wish to hear the young beginner recite the chapters, they have the easy means of doing so. I have dealt pretty largely in anecdotes and sketches, hoping thereby to reconcile the reader to the dryer parts of the work. Having spiced my chapters with tales and legends, I venture to wind up with an occasional chronological table, and ask the reader to look at it. I have sprinkled in many engravings, for I would gain the attention of my pupil by every available art. I wish him to read, and as he reads, to think and feel. If he does this, he will gain a knowledge of events, and extract useful lessons from them, and thus the end I have desired will be attained."

The engravings which follow, and the extracts illustrative of them, are selected from the work, as samples of the whole.

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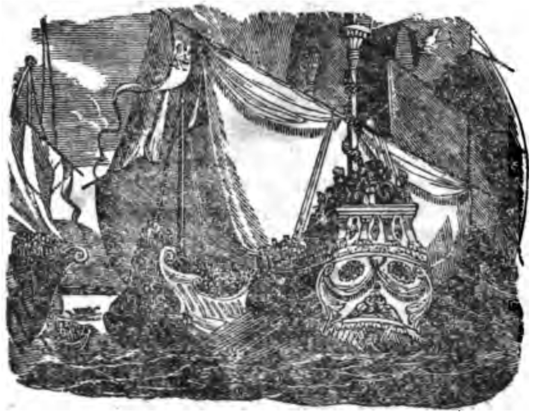
[*] Charlestown, near Boston.

Roman coasting vessel.]

The first vessel of the Roman navy is said to have been built after the model of a Carthaginian galley, taken in war. Their ships were roughly and slightly constructed, and, though very large, unfit to contend with boisterous and tempestuous weather.

They were clumsy and ill-fashioned, with a high stern and sides, and rowed with two or three tiers of oars on different decks. The prows of the ship were armed with iron, usually carved into the shape of some animal's head; the upper deck was surmounted with a moveable turret, from which the soldiers could throw their weapons with advantage.

The merchant ships of the Romans were of a size corresponding with the purposes for which they were intended. Before the discovery of the magnet, by which the mariner can now direct his course in safety over the pathless waves, navigation was necessarily confined to the coast. These coasting vessels were considered large, if they reached the burden of fifty tuns.

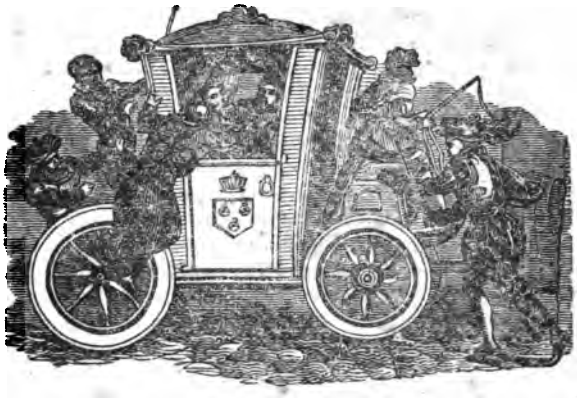


[The Doge of Venice wedding the sea.]

When the northern barbarians invaded Italy, in 452, the inhabitants living in the vicinity of the present city of Venice settled in the marshes along the border of the sea, and supported themselves by fishing, making salt, and by commerce.

In the year 809, they commenced building the city of Venice on a little island called Rialto. To this place they transported their riches, and soon the new city became the capital of the Republick of Venice. The city and state increased, until at length Venice was one of the most powerful states in the world.

The inhabitants paid great attention to commerce, and such was the number of their ships, that in the eleventh century, Venice sent a fleet of two hundred sail to assist in the first crusade. It was on account of the interest which this state had in maritime matters that the Doge, who was the chief officer, used to be wedded to the sea with pompous ceremonies.



[Murder of Henry IV. of France.]

Henry the Fourth of France, ascended the throne in 1589. He was a good king, a brave warriour and a generous man. His subjects loved him, and the French have always been proud of Henry IV.

Yet the affection of the people could not save his life. One day he was riding through the streets of Paris in his coach. Seven courtiers were with him. Other vehicles were in the way, so that the coachman was compelled to stop the horses. The king chose to alight.

There was a man near the coach, named Ravaillac. He was waiting for a chance to kill the king; and now, seeing him about to get out of the coach, he drew a poniard. All the power of France could not now be of any avail. The first blow of the poniard wounded the king, and the second killed him.

[Napoleon Bonaparte.]

In the French army, there was a young lieutenant of artillery, named Napoleon Bonaparte. When the war began, he was an unknown and friendless youth. But he distinguished himself in every battle and every siege, till in a very few years, the whole world had heard of Bonaparte.

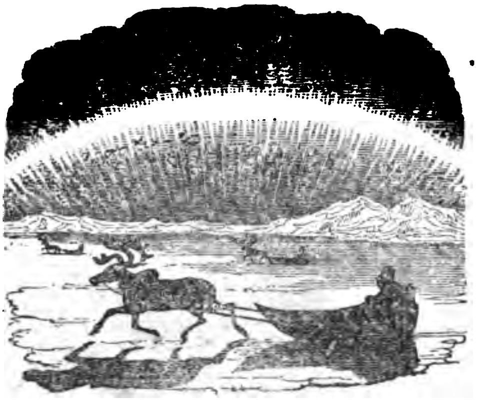
When he was only twenty-six years old, he conquered Italy. The next year he compelled the emperour of Austria to make peace. In 1798, he invaded Egypt, and fought many battles in the sandy deserts, and among the pyramids.

The French were now tired of being governed by men whose only engine of government was the guillotine. They wanted a ruler who would deserve their obedience by his sagacity and energy, and not merely compel them to obedience by the fear of having their heads cut off.

Napoleon Bonaparte was such a man. He was not a good man, nor a truly wise one. He was a selfish and ambitious despot. But perhaps he was a more suitable ruler for such a people as the French, than if he had been a different man.

He saw that the French were now so excited that it would be difficult, perhaps impossible, to restrain them. He thought it better that they should make war on foreigners than slaughter each other, and with the sword, rather than with the guillotine. So, partly because he could not help it, but chiefly because he was ambitious, Napoleon Bonaparte became a mighty conqueror.

[House where Peter the Great lived while in Holland.]



[A Laplander travelling in a sledge.]

Lapland is the most northern country in Europe, and is divided between Russia and Sweden. The country is so cold that the hot liquor we call brandy sometimes freezes there. I am afraid, however, that the Lapps find means of thawing more of it than is good for them.

I have already told you something about the Laplanders. The men are four about feet high, and the women not much taller than a cider-barrel. The people have a great many raindeer, whose flesh supplies food, and whose skins furnish clothing. They also take the place of horses, and drag the people over the snow in sledges at a rapid rate. These people have no history that is worthy of being related here.

FARMERS' DEPARTMENT.

CLOVER.

Clover forms a valuable food for cattle. There are many species, but the common, the white, and the red clover are those generally cultivated.

Clover is a hardy plant, whose roots decay after they have produced seeds; but by eating it down, or mowing it, when it begins to flower, it causes the roots to send out new shoots, whereby the plant is continued longer than it would naturally be. The common allowance of seed for an acre of ground is ten pounds. In the choice of the seed, that which is of a bright yellow colour, inclining to brown, should be preferred; and the pale-coloured thin seed should be rejected. The clover-seed should be sown after the barley is harrowed in, otherwise it will be buried too deep; and, after the seeds are sown, the ground should be rolled, which will press the seeds into the ground; but this should be done in dry weather, for moisture will often cause the seeds to burst, and when the ground is wet the seeds will adhere to the roller.

It is advisable to sow the seed in August, when there is a prospect of rain soon after; for as the ground is, at that season, warm, so the first shower of rain will bring up the plants, and these will have time enough to get strength before winter: and if the clover be well rolled some time in October, when the ground is not too wet, it will press the earth close to the roots, and cause the plants to send out more shoots; the same should be repeated in March, which will be found very serviceable to the clover. The reason for preferring this season rather than the spring, for sowing the seeds, is because the ground is cold and wet in spring, and, if much rain falls after the seeds are sown, they will rot in the ground; and sometimes when the seed is sown late in the spring, if the season should prove dry, the seeds will not attain perfection. The other season is therefore the surest, and consequently should be preferred.

The most usual time, however, of sowing the red or broad clover is in the spring; for, though it will come up well if sown in autumn, it is, while young, very liable to be killed by frost; and many crops of it that have come up finely in autumn, have been totally destroyed by the frost in winter, especially in strong moist soils, upon which it commonly produces the greatest crops if sown in the spring.

About the middle of May this grass will be fit to cut, when the greatest care should be taken in the making it into hay; for it will require a great deal more labour and time to dry than common grass, and will shrink into less compass; but, if it be not too rank, it will make extraordinary rich food for cattle. The time for cutting is when it begins to flower; for, if it stands much longer, the lower part of the stems and the under leaves will begin to dry, whereby it will afford a less quantity of hay, and that not so well flavoured.

When the seeds are intended to be saved, the first crop in the spring should be permitted to stand until the seeds are ripe, which may be known by the stalks and heads changing to a brown colour, when it should be cut in a dry time; and, after being well dried, it may be housed till winter, when the seeds should be threshed out; but, if the seeds are wanted for immediate sowing, it may be threshed before it be housed or stacked; but it must then be well dried in the field, otherwise the seeds will not quit their husks.

It has been a common complaint among the farmers, that they could not thresh out these seeds without great labour and difficulty; but this is chiefly owing to their cutting their spring crop when it begins to flower, and leaving the second crop for seed; which ripening so late in autumn, there is not heat enough to dry the husks sufficiently, whereby they are tough, and the seeds rendered difficult to get out. This complaint may therefore be entirely removed by leaving the first crop for seed, as above directed; and then the ground will be ready to plough and prepare for wheat the same year, which is another advantage.

When cattle are fed with this hay, the best way is to put it in racks, otherwise they will tread a great deal of it down with their feet. This food is better for most other cattle than milch-cows, so that these should have very little of it, lest it should prove hurtful to them; though it is not near so injurious to any sort of cattle when dry as it is when green.

The second sort, namely, the white Dutch clover, grows naturally in most of the pastures in England, and is generally known among the country-people by the name of white honeysuckle. This is an abiding plant, whose branches trail upon the ground, and send out roots from every joint, so that it thickens and makes the closest sward of any of the sown grasses; and it is the sweetest seed for all sorts of cattle yet known: therefore when land is designed to be laid down for pasture, and intended to continue so, it should be sown with the seeds of this plant.

There is an advantage of pasturing white clover, which does not strike every farmer; each joint of them furnishes a fresh root, (and of course a fresh plant,) whenever such joint comes in close contact with the soil; and consequently the more it is trodden, the thicker it will get upon the ground.

The usual allowance of this seed is eight pounds to one acre of land; but it should never be sown with corn; for, if there is a crop of corn, the grass will be so weak under it as to be scarcely worth standing; but such is the covetousness of some farmers, that they will not be prevailed on to alter their old custom of laying down their grounds with a crop of corn, though they lose twice the value of their corn by the poorness of the grass, which will never come to a good sward, and one whole season is also lost; for, if this seed be sown in the spring without corn, there will be a crop of hay to mow by the middle, or latter end of July, and a much better after-seed for cattle the following autumn and winter than the grass which is sown with corn will produce the second year. The seed of this sort may also be sown in autumn, in the manner before directed for the common red clover; and this autumnal sowing, if the seeds grow kindly, will afford a good early crop of hay the following spring; and if, after the hay is taken off the land, the ground be well rolled, it will cause the clover to mat close under the ground, and become a thick sward.

An improvement in the process of harvesting has lately been successfully practised. It consists in a mode of making clover-hay in wet weather.

In this method of making hay, not only a number of hands are saved, but the hay is better and more nourishing. The hay is prepared by self-fermentation, whereby it retains its nutritious juices, and only loses its watery particles; it is dried more expeditiously by the dissipation of its humidity and the contraction of the sap-vessels, and thus its nutritious juices are concentrated. This process is conducted in the following manner, viz. the sap-vessels are expanded by the circulation of the liquid juices by heat, and the superfluous humidity is exhaled: on cooling, the sap-vessels contract, and thus future intestine fermentation is prevented, and the nutritious quality is preserved.

Upon this principle, the clover intended for hay, after having been mowed, remains till four o'clock in the afternoon of the following day in the swath, to dry; it must then be raked together into small coils, and afterward made into large cocks in the form of a sugar-loaf, and such as it would require six or eight horses to remove. To prevent the air from penetrating these cocks, and to produce a quicker fermentation, they must, whilst forming, be trodden down by one or two men. If it be a still, close, warm night, the fermentation will commence in four hours, and manifest itself by a strong honey-like smell: when a proper fermentation is begun, the cocks will, on being opened, smoke, appear brownish, and may then be spread abroad. If in the morning the sun is warm, and a little wind arises, the clover-hay will quickly dry; it may then, toward noon, be turned with the rake or pitchfork, and about four in the afternoon it will be sufficiently dried, so that it may be immediately carted into the barn, without any danger of a second fermentation.

By this method of management, the clover will require only three days from the time of mowing to its being housed, and very little work; whilst, in the common way, even in good weather, it requires six or eight days. In the old method it frequently becomes of a black colour; but in the new method it is only brown, has an agreeable smell, and remains good and unchangeable in the barn. The farmer has also another advantage, that, if he have not carts enough to carry it into the barn, he need only, at sunsetting, heap it again into large well-trodden cocks, and thatch them with straw, in which state they will remain the whole summer without damage or loss. This clover-hay is not only greedily eaten by sheep and lambs, but also by horses, calves, and cows.

The last, in particular, prefer it to the meadow-hay: it produces a great quantity of rich milk; and the butter made from it is almost as yellow as summer-butter.

This new mode of making hay depends principally upon two circumstances—first, that the mown clover, when brought together into large heaps, may ferment equally and expeditiously; secondly, that the day succeeding the fermentation be dry, sunny, and windy. On this account it may be proper to point out what should be done when circumstances are unfavourable.

Let us suppose, therefore, that the night after the clover-grass has been placed in the great cocks, is cold, damp, or rainy, the fermentation will yet take place, although it may require a term of twelve, sixteen, or twenty-four hours to effect it. If it be a second or a third crop, at which season the nights are colder, it may even require from thirty-six to forty-eight hours before the fermentation ensues: it will however commence, and may be ascertained from this circumstance, that you can scarcely bear your hand in the interiour of the cock.

Even if the night be dry, yet, if a strong cold wind blows, the cock may not ferment equally, but only in the middle, and on the side opposite to the wind; the other parts may still remain green. In such a case the following rules must be attended to:—

1st. If the cock has only fermented in the middle, and on that side where the cold wind did not act upon it, the whole heap must nevertheless be opened the following morning. That which has already fermented must be separated and spread to dry; it must be turned toward noon, and may be carted into the barn in the evening; but that part of the cock which has not fermented must be again put together into large cocks, and fermented in the same manner as the preceding part, after which it may be spread to dry, and brought into the barn.

2d. When a small portion of the cock has fermented thoroughly, but not the greater part, the heap must be spread abroad in the morning, but must be again made into a close cock in the evening, in such a manner that the part which has fermented be placed at the top or outside of the cock, and that which has not fermented be enclosed within it; then on the ensuing morning, or, if the weather be cold and rainy, on the morning afterward, the clover-heap may be again spread abroad, and the clover treated as in the case first mentioned.

3d. If in spreading the heap abroad, it be found that nearly the whole of the clover has fermented, it will not be necessary to delay the housing of the whole on account of some small portion; but the clover may be dried, and carted into the barn. The small portion which remains unfermented will not occasion any injury to the other which has fermented; for there is a material difference betwixt hay thus managed and the meadow-grass which is brought whilst damp, or wet with rain, into the barn, which will grow musty and putrid.

4th. When some of the cocks of clover have thoroughly fermented, and it rains on the morning, they ought to be spread abroad, for the clover must be opened and spread, even if it rains violently; since, if it were suffered to remain longer in the heap, it would take fire, or its juices would be injured by too much fermentation; the leaves and stalks would become black, and the clover unfit for food: therefore, if the rain continues, the spread clover must be turned from time to time, but not carted into the barn till dry. This drying takes place, if the rain discontinues for a few hours, much more expeditiously with the clover which has fermented, than with that made in the common way, besides which it must be remarked that the fermented clover remains good, even if it continues some weeks exposed to the rain, provided it is at last suffered to dry before it is put into the barn; otherwise the wet from the rain will render it musty and bad. The clover which has been so long a time exposed to the rain, will not, however, be so nutritious as that which has been well fermented and sooner dried; but it will be far superiour to that which has been exposed to the rain, and got up in the common method.

This mode has been generally adopted in Silesia, and found in every respect preferable to the old practice. On one of the estates there, it rained much during the hay-time; they were obliged to spread the clover out of the large cocks, owing to its having fermented only in the middle; the parts which had not fermented were carefully separated, and made again into large cocks, which fermented at the expiration of thirty-six hours, rainy weather and cold nights continuing during this period, after which time it was again spread abroad. The former, as well as the latter, remained for three days exposed to the rain, during which period it was turned several times; the rain ceased on the fourth day, so that the clover-hay was turned toward noon, and carted into the barn that evening. This clover-hay remained in the hay-loft without change, and was a very nutritious food. Several milch-cows were fed with it, which not only ate it greedily, but also increased in their milk. Lambs and calves also throve with it greatly.

This method of making clover-hay prevents its taking fire; for clover which has been once well fermented and dried, does not change nor spoil in the hay-loft.

If the weather be remarkably hot, the farmer may, by the adoption of this plan, prevent accidents; for grass hastily made into hay, however dry it may appear to the hand, contains within its fibres much humidity, and when trodden down in the stack will ferment rapidly, from this humidity endeavouring to escape, which often fires the stack. A certain degree of fermentation is necessary in the making of hay, in order to develop its saccharine qualities, and make nutritious food. This saccharine fermentation is evident from the smell and colour of the hay in common stacks, and from tasting an infusion of it; it resembles in some degree the process of making malt from barley, and requires a similar attention. The method above related is likely to be generally advantageous in making clover, lucern, and meadow-hay in this country, and to lead to valuable improvements in agriculture.

ORIENTAL WATER-CARRIER.

In Oriental towns, water is not conveyed to the several streets and houses by pipes or trenches. It must all be brought from the river or the wells. In towns, this is seldom done by the householders themselves, or by their servants. There are men who make it a trade to supply every day, to regular customers, the quantity of water required. This they carry about in a well-prepared goatskin, which is slung to the back in the manner represented in our cut, the neck, which is usually brought under the arm and compressed by the hand, serving as the mouth of this curious, but exceedingly useful vessel. Persons of larger dealings have an ass which carries two skins at once, borne like panniers: and we have known very prosperous water-carriers who had ox skins carried on a horse. These men, continu-

[Oriental Water-Carrier.]

ally passing to and fro with their wet bags through the narrow streets, are great nuisances in the towns, from the difficulty of avoiding contact with them. The care taken to avoid them, in some degree answers to that which people exhibit in our own streets to avoid carriages and carts. There are no draught vehicles in Asiatick towns; and the water-carriers with their bags, together with the "hewers of wood," bearing large fagots on their own backs or the backs of horses or mules, form the only obstructions which usually occur in the streets, narrow as they are. In a time of publick calamity the water-carriers are the last to discontinue their labour; and their doing so is a sure indication that the distress has become most intense and imminent, and is indeed a great calamity in itself. The writer remembers that, when this happened, in the time when a severe plague was raging, Europeans, who were quite alive to the importance of maintaining a strict quarantine in their own houses, were, nevertheless, obliged to go out through the town to fetch water for themselves from the distant river.

A BATTLE WITH A TIGER.

There is now living in the village of Kildwick, in Yorkshire, England, a Mr. Turner, who, at an early period of his life, was in the East Indies, as a soldier in one of the regiments stationed there. When encamped at Ganjam, on the Malabar coast, he had a dreadful personal conflict with a huge tiger. With the particulars of the affair Mr. Turner himself has obligingly furnished the world. He is probably the only living instance of an individual encountering a tiger under such circumstances, and remaining as he certainly did, by the retreat of the enemy, master of the field.

On the day the regiment arrived at Ganjam, two men belonging to it, named Bateman and Murray, had gone upon a contiguous mountain, without firearms, and had been put to considerable consternation by a large black bear. The next morning they invited Mr. Turner to accompany them to the same place, and took with them two muskets and bayonets, with six rounds of ammunition as a prudential defence against the dangers they might probably encounter.

Having ascended the summit of the mountain, Mr. Turner perceived a small loose rock, upon the edge of a lofty precipice, and tumbled it down for the purpose of disturbing from their lurking-places the wild and savage tenantry of the place. The result was quickly seen, for one of the party immediately shouted out, "A tiger! a tiger!" and fired upon it, when they all immediately recognised a large royal tiger, that turned his eyes upon his enemies, and paralyzed them with a dreadful roar, as he doubled the angle of the mountain in proceeding to his lair. This unfortunately lay directly upon the path by which they had ascended the mountain; and being the only safe road by which they could descend the eminence, the tiger's position cut off their retreat.

Recovering a little from their consternation, Bateman and Murray proposed to attempt their escape in another direction; while Mr. Turner, more courageous, was for facing the foe, and offered to fire upon the tiger if his companions would load their pieces. Mr. Turner had barely secured a favourable position for the attack, as his eye met that of the tiger, who, with an amazing bound and dreadful roar, sprang up to meet him. The assailant fired, and the tiger fell, tumbling down the rocks he had ascended with so much agility; but recovering himself, the monster made a second spring, with a roar of agonized fury, when he received Mr. Turner's second ball, which tumbled him again backward. Again the tiger returned to the charge, more infuriated from the effects of each successive shot; when Mr. Turner's companions called out that their ammunition was expended, and advised their escape by the back of the mountain. Against this he remonstrated from his own perilous position, and urged them to stand by him; but they were deaf to all remonstrance, and disgracefully left him to the fury of the tiger, whose near approach was announced by a roar more terrifick than he previously uttered.

Mr. Turner had but a moment to place himself in a posture of defence, when the infuriated animal sprung at him, and received the bayonet into the breast up to the muzzle of the musket. In the attempt to disengage the bayonet from the tiger's chest, however, it became separated from the musket, when Mr. Turner instantly clubbed, and, with every energy that fear and courage could supply, he struck the tiger with such force as slightly to fracture his scull, while the fire-lock was broken by the blow into three pieces.

Up to that moment the hardy soldier had not received a slight scratch, though he had inflicted many severe wounds upon his adversary; but his present position was the extreme of peril, being unarmed and completely defenceless before an enraged tiger, whose wounds appeared to make him more dreadfully infuriate. The tiger sprung at the head of his victim, and immediately brought him to the ground, and seizing him by the right shoulder, he lifted him from the earth with a furious shake, tearing his body across the loins from side to side. In a very short period thirty-three wounds were inflicted on the body of Mr. Turner, while his garments, which were a sort of undress of light calico, were torn to shreds and drenched in blood; indeed, all that remained of the dress upon his mangled body were the waistband of the pantaloons and the collar of his shirt.

Though thus dreadfully mutilated, shaken, and torn by the savage beast, Mr. Turner had the presence of mind to fix his grasp in a wound which one of the musket-balls had made in the neck of the tiger, and tore out a quantity of ragged flesh from the interiour of the wound. From the pain thus inflicted upon the tiger, he uttered a tremendous roar, which was distinctly heard in the camp, a mile distant, and then took his departure. For some moments Mr. Turner lay upon the rock insensible: but a voice from two Europeans exclaiming, " Turner 's killed !" roused him, and jumping on his feet, he cried out, " I am worth twenty dead men yet !" Being taken into the camp, his wounds were carefully examined, and dressed, and happily pronounced not mortal.

The result justified the decision; by careful treatment, Mr. Turner so far recovered as to be able to revisit the scene of the battle in about a month from the period when it took place. The dead body of the tiger was found the morning after the affray, upon the bank of a small rivulet whither he had gone to quench his thirst. Mr. Turner very naturally observes, that the recollection of this perilous conflict, though more than thirty years have rolled over since its occurrence, is still frequently attended with emotions of wonder and terrour.

THE FARMER'S SONG.

SWEET is the bread that toil hath won,
And sweet the sleep it brings,
And sweetly, when the day is done,
My cheerful helpmate sings.
How proudly round my hearth I see
My sturdy sons draw near,
And O! how kindly smiles on me
Each one that's gathered here.

A thousand songsters welcome me
Forth to my daily toil;
And flowers of many a form and hue
Upspringing from the soil;
The spring whose promise beckons me
To sow the needful grain,
And glorious autumn thankful shows
Its harvest mantled plain.

The student in his narrow cell
Reads by his midnight lamp,
I read in Nature's open book
Truths of immortal stamp.
While monarchs tremble on their thrones,
And quakes the city's lord,
I firmly stand upon the Earth,
A basis deep and broad.

Sweet is the bread that toil hath won,
And sweet the sleep it brings,
And sweetly when the day is done,
My cheerful helpmate sings,
How proudly round my hearth I see
My sturdy sons draw near,
And O! how kindly smiles on me
Each one that's gathered here.

[Register and Observer.

MECHANISM OF A WATCH.

" Consider the influence on the affairs of men, in all their relations, of the invention of the little machine which I hold in my hands, and the other modern instruments for the measurement of time, various specimens of which are on exhibition in the Halls. To say nothing of the importance of an accurate measurement of time in astronomical observations, nothing of the application of time-keepers to the purposes of navigation—how vast must be the aggregate effect on the affairs of life, throughout the civilized world; and, in the progress of ages, of a convenient and portable apparatus for measuring the lapse of time! Who can calculate in how many of those critical junctures when the affairs of weightiest import hang upon the issue of an hour, prudence and forecast have triumphed over blind casualty, by being enabled to measure with precision the flight of time, in its smallest subdivisions!

" Is it not something more than mere mechanism, which watches with us by the sick bed of some dear friend, through the livelong solitude of night, enabling us to count, in the slackening pulse, Nature's trembling steps toward recovery, and to administer the prescribed remedy at the precise, perhaps the critical moment of its application! By means of a watch, punctuality in all his duties, which in its perfection is one of the incommunicable attributes of Deity, is brought, in no mean measure, within the reach of man. He is enabled, if he will be guided by this, to imitate that sublime precision which led the earth, after a circuit of five hundred millions of miles, back to the solstice at the appointed moment without the loss of one second, no, not the millionth part of a second, for the ages on ages during which it has travelled that road. What a miracle of art, that a man can teach a few brass wheels, and a little piece of elastick steel to out-calculate himself; to give him a rational answer to one of the most important questions which a being travelling towards eternity can ask! What a miracle that a man can put within this little machine a spirit that measures the flight of time with greater accuracy than the unassisted intellect of the profoundest philosopher; which watches and moves when sleep palsies alike the hand of the maker and the mind of the contriver, nay, when the last sleep has come over them both." Everett.

STRENGTH OF THE ARABS.

AMONG the Arabs, the Persians and the Turks, you do not meet with those rickety, consumptive beings, that are so common in Europe; you do not meet with such pale, wan, sickly looking coutenances: their complexions are bright and florid; they are vigorous and strong, able to ride a hundred miles a day, and capable of performing feats which our professed athletæ would not be able to do. I remember seeing a most striking instance of their powers. A band of men from the Himalaya had come to Calcutta for the purpose of exhibiting feats of strength, and they were indeed perfect Samsons. Their sizes struck me with admiration; I know nothing that I can compare to them; but perhaps some of you have seen the statue at the bottom of the stairs at Somerset House; it is Hercules leaning on the club; it is about seven feet high, and looks like a being capable of executing the most difficult task; and such men were these athletæ. We selected five men on board the Glasgow frigate, a similar number from each of the regiments, and likewise from an Indiaman, all fine picked men, and yet, upon a trial of their strength, it was found that the Himalaya mountaineers were equal to two and three quarters of the strongest Europeans! They could grasp a man and hold him in the air like a child, and if they had not been under control, I am convinced they could have crushed him to death. I felt them, and I never felt such flesh in my life—it appeared like rolls of muscle; and yet none of these men had ever tasted spirit. I do not say that drinking water was the cause of this, but it serves to prove that abstinence from intoxicating drinks is perfectly compatible with the possession of great bodily power.

Buckingham's Lectures.

STATISTICKS OF INSANITY IN CITIES.

M. Briere de Boismont has produced the following comparative statement of the number of insane persons in the great capitals in proportion to their respective populations:—

Capitals.	Population.	Madmen.	Proportion.	
London,	1,400,000	7,000	1 in	200
Paris,	890,000	4,000	1—	222
St. Petersburgh,	377,046	120	1—	3,183
Naples,	364,000	479	1—	759
Cairo,	330,000	14	1—	30,714
Madrid,	201,000	60	1—	3,350
Rome,	154,000	320	1—	481
Milan,	150,000	618	1—	242
Turin,	114,000	331	1—	344
Florence,	80,000	236	1—	338
Dresden,	70,000	150	1—	466

Making a deduction for the number of insane persons foreigners to the cities, and which as to Paris, according to the documents of M. Desportes, amounts to about one seventh of those so afflicted, it becomes an incontestable fact that the number of mad persons is rather in relation to the progress and extent of civilization than the numerical amount of population. London and Paris are certainly the most populous cities of Europe, and as certainly contain most insane persons; but they are, at the same time, justly deemed the two centres of civilization. Naples, which contains nearly four hundred thousand souls, reckons only one eighth of the number of insane persons in Paris, and one fourth of those in London. The proportion in Cairo is very diminutive. If we range the above eleven cities according to the number of insane persons they contain, they will stand in the following order;—1. London; 2. Paris; 3. Milan; 4. Florence; 5. Turin; 6. Dresden; 7. Rome; 8. Naples; 9. St. Petersburgh; 10. Madrid; 11. Cairo.

French Paper.

STATEMENT

Of the quantity of rain which has fallen in each year from 1810 to 1837, inclusive—the first fourteen years by the gauge of P. Legoux, at Spring Mill, and the following fourteen years by that kept at the Pennsylvania Hospital.

	Inches.		Inches.
1810 - - - -	32,656	1824 - - - -	38,740
1811 - - - -	34,968	1825 - - - -	29,570
1812 - - - -	39,300	1826 - - - -	35,149
1813 - - - -	35,625	1827 - - - -	38,560
1814 - - - -	43,135	1828 - - - -	37,970
1815 - - - -	33,666	1829 - - - -	41,859
1816 - - - -	27,947	1830 - - - -	45,070
1817 - - - -	36,005	1831 - - - -	43,940
1818 - - - -	30,177	1832 - - - -	39,870
1819 - - - -	23,354	1833 - - - -	48,550
1820 - - - -	39,609	1834 - - - -	34,240
1821 - - - -	32,182	1835 - - - -	39,300
1822 - - - -	29,864	1836 - - - -	42,660
1823 - - - -	41,851	1837 - - - -	39,040

The whole quantity of rain which fell in the above twenty-eight years, 1035,742 inches, which gives an annual average of 36,991 inches.

The rain in each month of 1837, was as follows:

	Inches		Inches.
1st month - - -	2.50	8th month - -	4.05
2d - - - - - -	3.58	9th - - - -	2.28
3d - - - - - -	3.76	10th - - - -	0.66
4th - - - - - -	2.83	11th - - - -	3.23
5th - - - - - -	4.86	12th - - - -	2.50
6th - - - - - -	2.83		
7th - - - - - -	5.89	Total	39.04

Pennsylvania, Hospital, 1st mo., 1st, 1838.

American Daily Advertiser.

WORKS OF ART.

The principal painters of the Venetian school were—Titian, Georgione, Paulo Veronese, Tintoret, and Bassano. The Bolognese school consisted of the Caraccis, Domenichino, and their disciples. The chief Flemish painters were Reubens, Vandyke, Rembrandt, Teniers, Vangoyen, Ruysdael, and Vanderneer.

The founders of the British school were Thornhill, Richardson, Hogarth, Wilson, Gainsborough, Reynolds, Barry, and West.

The artists of the French school were Poussin, Claude Lorraine, Vernet, and David.

The two great painters of the Spanish school are Murillo and Velasquez.

The earliest known painters are Cimabue, Chirlandao, Massacio, Quintin Matys, and Albert Durer.

The greatest painters in order, were Raphael, Michael Angelo, Correggio, Leonardo da Vinci, Titian, Guido, Rubens, Rembrandt, Vandyke, Teniers, Murillo, Caracci, Claude, N. Poussin, and Carlo Dolce.

SIGNERS OF THE DECLARATION OF AMERICAN INDEPENDENCE.

IN CONGRESS ASSEMBLED, JULY 4, 1776,

WITH THE DATES OF THEIR BIRTH, DEATH, AND AGES RESPECTIVELY ANNEXED, ETC.,

IN ALPHABETICAL ORDER,

By W. C. Armstrong.

NAMES OF THE SIGNERS.	BORN AT		DELEGATED FROM	DIED ON THE	
Adams, John	Braintree, Mass.	19 Oct. 1735	Massachusetts,	4th July, 1826,	in his 91st year
Adams, Samuel	Boston, "	27 Sep. 1722	Massachusetts,	2d Oct. 1803,	82d
Bartlett, Josiah	Amesbury, "	in Nov. 1729	New Hampshire,	19th May, 1795,	66th
Braxton, Carter	Newington, Va.	10 Sep. 1736	Virginia,	10th Oct. 1797,	62d
Carroll, Charles, of Carrollton	Annapolis, Md.	20 Sep. 1737	Maryland,	14th Nov 1832,	96th
Chase, Samuel	Somerset co. Md.	17 Apr. 1741	Maryland,	19th June, 1811,	71st
Clark, Abraham	Elizabethtown, N. J.	15 Feb. 1726	New Jersey,	—— Sept. 1794,	69th
Clymer, George	Philadelphia, Penn.	in 1739	Pennsylvania,	23d Jan. 1813,	74th
Ellery, William	Newport, R. I.	22 Dec. 1727	R. I. & Prov. Pl.	15th Feb. 1820,	93d
Floyd, William	Suffolk co. N. Y.	17 Dec. 1734	New York,	4th Aug. 1821,	87th
Franklin, Benjamin	Boston, Mass.	17 Jan. 1706	Pennsylvania,	17th April, 1790,	84th
Gerry, Elbridge	Marblehead, Mass.	17 July 1744	Massachusetts.	23d Nov. 1814,	70th
Gwinnett, Button	England, Europe,	in 1732	Georgia,	27th May, 1777,	45th
Hall, Lyman	———, Conn.	in 1731	Georgia,	—— Feb. 1790,	60th
Hancock, John	Braintree, Mass.	in 1737	Massachusetts	8th Oct. 1793,	55th
Harrison, Benjamin	Berkely, Virginia	——	Virginia,	in April, 1791,	——
Hart, John	Hopewell, N. J.	about 1715	New Jersey,	— ——, 1780,	66th
Heyward, Thomas, jr.	St. Luke's, S. C.	in 1746	South Carolina,	in Mar. 1809,	63d
Hewes, Joseph	Kingston, N. J.	in 1730	North Carolina,	10th Nov. 1779,	50th
Hooper, William	Boston, Mass.	17 June 1742	North Carolina,	in Oct. 1790,	48th
Hopkins, Stephen	Scituate, Mass.	7 Mar. 1707	R. I. & Prov. Pl.	13th July, 1785,	78th
Hopkinson, Francis	Philadelphia, Penn.	in 1737	New Jersey,	9th May, 1790,	53d
Huntington, Samuel	Windham, Conn.	3 July 1732	Connecticut,	5th Jan. 1796,	64th
Jefferson, Thomas	Shadwell, Virginia,	13 Apr. 1743	Virginia,	4th July, 1826,	84th
Lee, Francis Lightfoot	Stratford, "	14 Oct. 1734	Virginia,	—— April, 1797,	63d
Lee, Richard Henry	Stratford, "	20 Jan. 1732	Virginia,	19th June, 1794,	64th
Lewis, Francis	Landaff, Wales	in Mar. 1713	New York,	30th Dec. 1803,	90th
Livingston, Philip	Albany, N. Y.	15 Jan. 1716	New York,	12th June, 1778,	63d
Lynch, Thomas, jr.	St. George's, S. C.	5 Aug. 1749	South Carolina,	lost at sea, 1779,	28th
McKean, Thomas	Chester co., Penn.	19 Mar. 1734	Delaware,	24th June, 1817,	84th
Middleton, Arthur	Middleton Place, S. C.	in 1743	South Carolina,	1st Jan. 1787,	45th
Morris, Lewis	Morrisania, N. Y.	in 1726	New York,	22d Jan. 1798,	72d
Morris, Robert	Lancashire, England,	Jan. 1733-4	Pennsylvania,	8th May, 1806,	73d
Morton, John	Ridley, Penn.	in 1724	Pennsylvania,	in April, 1777,	54th
Nelson, Thomas, jr.	York, Virginia,	26 Dec. 1738	Virginia,	4th Jan. 1789,	51st
Paca, William	Wye-Hill, Md.	31 Oct. 1740	Maryland,	in 1799,	60th
Paine, Robert Treat	Boston, Mass.	in 1731	Massachusetts,	11th May, 1804,	83d
Penn, John (son of Moses)	Caroline co., Va.	17 May, 1741	North Carolina,	26th Oct. 1809,	63d
Read, George	Cecil county, Md.	in 1734	Delaware,	in 1798,	64th
Rodney, Cæsar	Dover, Delaware,	in 1730	Delaware,	in 1783,	53d
Ross, George	New Castle, Delaware,	in 1730	Pennsylvania,	in July, 1779,	49th
Rush, Benjamin, M. D.	Byberry, Penn.	24 Dec. 1745	Pennsylvania,	19th April, 1813,	68th
Rutledge, Edward	Charleston, S. C.	in Nov. 1749	South Carolina,	23d Jan. 1800,	51st
Sherman, Roger	Newton, Mass.	19 Apr. 1721	Connecticut,	23d July, 1793,	73d
Smith, James	———, Ireland,	—	Pennsylvania,	11th July, 1806,	—
Stockton, Richard	Princeton, N. J.	1 Oct. 1730	New Jersey,	28th Feb. 1781,	51st
Stone, Thomas	Charles co., Md.	in 1742	Maryland,	5th Oct. 1787,	43d
Taylor, George	———, Ireland,	in 1716	Pennsylvania,	23d Feb. 1781,	65th
Thornton, Matthew	———, do.	in 1714	New Hampshire,	24th June, 1803,	89th
Walton, George	Frederick co. Va.	in 1740	Georgia,	2d Feb. 1804,	64th
Whipple, William	Kittery, Maine,	in 1730	New Hampshire,	28th Nov. 1785,	55th
Williams, William	Lebanon, Conn.	8 Apr. 1731	Connecticut,	2d Aug. 1811,	81st
Wilson, James	Scotland,	About 1742	Pennsylvania,	28th Aug. 1798,	56th
Witherspoon, John	Yester, Scotland,	5 Feb. 1722	New Jersey,	15th Nov. 1794,	73d
Wolcott, Oliver	Windsor, Conn.	26 Nov. 1726	Connecticut,	1st Dec. 1797,	72th
Wythe, George	Elizabeth City co., Va.	1726	Virginia,	8th June, 1806,	81st

EXALTATION OF THE POPE.

THE HOLY WEEK AT ROME.

To those who are desirous of witnessing the gorgeous and imposing ceremonies of the Catholick church, the Holy Week at Rome is particularly attractive. The Holy Week at Rome! That time which is so anxiously expected, so earnestly desired, by all those who believe in the supremacy of the Pope! Then it is, that the traveller hastens onward to the Eternal city, to hear the *miserère*, that solemn and sublime musick which peals through the vaulted arches of the Sistine chapel—to see the splendid fane of St. Peter's in all its glory—and to witness the illuminations and fireworks for which Rome is unrivalled. Then too, the Italian peasant quits the scene of his labours, doffs his mean attire and dons his best habiliments to repair to the holy city, and procure, if possible, a dispensation of a few years of purgatory from the hands of the Pope himself. In short, Rome is then thronged with strangers from all parts of the world.

Numerous are the ceremonies of the week. *The washing of the pilgrims' feet, and the Blessing of the Palms*, are perhaps the most imposing. The latter takes place in the Sistine chapel; the Pope himself blesses the palms. Of these there are two kinds: those for the cardinals and for the senators are about six feet long, and are made in the city of Genoa which is specially privileged for their manufacture; each of those who have the right to receive them, goes to the feet of the Pope, who presents them with his own hands. Those of inferiour rank who are among the attendants, or who take part in the ceremony, receive small twigs of the real palm. The distribution of the palms being finished, each cardinal dresses himself to say mass, and puts on the robe of his own chapel which is very rich and elegant, white and embroidered with gold; one being selected for the purpose, the procession moves to the Pauline chapel. After the cross come those who officiate, then the cardinals, the head covered with the mitre preceding the sovereign pontiff. The pope is dressed in white; he wears a purple *mozette*, richly embroidered with gold, having the tiara on his head; he sits in a splendid chair, and is borne upon the shoulders of twelve men, while two follow him with large fans formed from the feathers of the white peacock, a rare bird which is raised near Rome expressly for this purpose. Our frontispiece represents the Pope at this moment. On the right of the picture is seen the celebrated bronze statue of St. Peter, the object of so much adoration to the Italian peasantry who throng around to kiss the toe of the statue, and to press their foreheads against the foot. In the foreground is seen the Pope dressed in his richest costume, borne upon the shoulders of his attendants, followed by his armed household, while still farther in front may be seen a cardinal and friars of the order *gray*.

The mass continues about an hour. Before the last reading of the evangelist, the sovereign pontiff accords forty-eight years of indulgence to those who have been present at the Blessing of the Palms, and who have assisted at the celebration of the mass. After pronouncing his benediction in a loud voice, the Pope with his attendants retire in the same order in which they entered.

CUSTOMS FIFTY YEARS SINCE.

[From Sullivan's Familiar Letters.]

It may not be uninteresting to sketch the condition and usages of society about the time of the adoption of the Constitution, according to the impression now retained of them. There were families who were affluent and social. They interchanged dinners and suppers. The evening amusement was usually games at cards. Tables were loaded with provisions. Those of domestick origin were at less than half the cost of the present time. The busy part of society dined then, as now, at one, others at two o'clock; three o'clock was the latest hour for the most formal occasions. There were no theatrical entertainments; there was a positive legal prohibition. There were concerts. About the year 1760, Concert Hall was built by a gentleman named Deblois, for the purpose of giving concerts; and private gentlemen played and sang for the amusement of the company. There were subscription assemblies for dancing, at the same place, and it required a unanimous assent to gain admission. Dress was much attended to by both sexes. Coats of every variety of colour were worn, not excepting red; sometimes the cape and collar were of velvet, and of a different colour from the coat. Minuets were danced, and contré dances. Cotilions were of later date. They were introduced by the French, who were refugees from the West India islands. A very important personage, in the fashionable world, was Mrs. Haley, sister of the celebrated John Wilkes. She came over in the year 1785, and purchased the house in which the late Gardiner Greene lived, at the head of Court street. She was then advanced in life, of singular personal appearance, but a lady of amiable deportment. She afterward married a gentleman who was the uncle of a celebrated Scotch reviewer; but after some years returned to England. Her house was a place of fashionable resort. Marriages and funerals were occurrences of much more ceremony than at the present day. The bride was visited daily for four successive weeks. Publick notice was given of funerals, and private invitations also. Attendance was expected; and there was a long train of followers, and all the carriages and chaises that could be had. The number of the former in town was not more than ten or twelve. There were no publick carriages earlier than the beginning of 1789; and very few for some years afterward. Young men, at their entertainments, sat long and drank deep, compared to the present custom. Their meetings were enlivened with anecdote and song.

Among the remarkable visiters of this country, was Brissot de Warville, in 1788, afterward chief of a faction in the French revolution, called the Girondists. He was executed in Robespierre's time, at the age of thirty-eight. He came over to learn how to be a republican. He was a handsome, brisk little Frenchman, and was very well received here. He wrote a book on this country. He was much delighted with the Quakers, and is said to have respected their simplicity of dress, and to have introduced, in his own country, the fashion of wearing the hair without powder.

There are more books, more reading, more thinking, and more interchange of thoughts derived from books, and conversation, at present, than there were fifty years ago. It is to be hoped that society is wiser, and happier than it was, from being better instructed. The means of education have greatly improved. There were then two Latin schools. One in School street, and one at the north part of the town. The only academies recollected, were one at Exeter, New Hampshire, and one at Andover, at which boys were prepared for college. It was a common practice for clergymen to receive boys into their families to prepare them for college. The means of educating females were far inferiour to those of the present time. The best were "*boarding-schools*," and there were but two or three of these. The accomplishments acquired were inferiour to those which are common among hundreds of young females at the present time. The sum of acquirements now, in the process of education, greatly surpasses that of forty years ago in both sexes. The moral condition of society among the well informed, (so far as is seen on the surface,) is greatly improved. There is more occupation of various sorts. Society, collectively, is undoubtedly better. Whether its members, in all things then and now, innocent, are happier or not, one cannot judge from youthful impressions. In one respect there is a change of immeasurable value; that is, in the intercourse of parents and children. It is very possible that there are some who prefer the strict discipline of former days; and who believe that as much of substantial benefit has been lost as gained, in the changes which have occurred. If this be so, it arises from the quality of education, and not because there is more of it.

BISMUTH.

Native bismuth occurs in the veins of primitive mountains, and is accompanied by ores of lead, silver, and sometimes of cobalt and nickel. It exists in reticulated, lamellar, or amorphous masses; is soft, and of a white colour, occasionally tinged with red. Specifick gravity, 9. It is found in many countries—in France, England, Sweden, Bohemia, and the United States; but its chief locality is at Schneeberg, in Saxony, from whence the supply of bismuth, in commerce, is principally derived. To procure the metal, the ore requires merely to be reduced to convenient fragments, and heated in furnaces, when the bismuth separates from the earthy matter in which it is engaged, and flows out into cast-iron moulds prepared for its reception. Bismuth, when pure, has a reddish-white colour, is harder than lead, and is easily broken under the hammer, by which it may even be reduced to powder. It melts at 470° or 480°, and crystallizes, on cooling, with great regularity, in the form of cubes. When kept in a state of fusion, at a moderate heat, it is covered with an oxide of a greenish-gray or brown colour; at a higher temperature, it enters into a feeble combustion, forming a yellow powder, called *flowers of bismuth*. It combines, by fusion, with a great number of metals, communicating to them brittleness and fusibility. The mixture discovered by Newton, and produced by melting together 8 oz. bismuth, 5 oz. lead, and 3 oz. tin, fuses at 202°. From it are made toy-spoons, which melt on being employed to stir very hot tea. A still more fusible compound was invented by Mr. Dalton, composed of 3 parts tin, 5 lead, and 10½ bismuth, which melts at 197°. The addition of a little mercury renders it even more fusible, and fits it to be used as a coating to the inside of glass globes. An alloy of equal parts of tin and bismuth melts at 280°; a less proportion of bismuth adds to the hardness of tin, and hence its use in the formation of pewter. Equal parts of tin, bismuth, and mercury, form the *mosaick gold*, used for various ornamental purposes. One part of bismuth, with 5 of lead, and 3 of tin, forms *plumbers' solder*, a compound of great importance in the arts. Bismuth combines with sulphur, and forms a bluish-gray sulphuret, having a metallick lustre. The same compound is found native in small quantity, and is called, in mineralogy, *bismuth glance*. Nitrick acid dissolves bismuth with great readiness. The solution is decomposed on the addition of water, and a white substance, called *magestens of bismuth*, is precipitated, which consists of a hydrated oxide, united to a small proportion of nitrick acid. This precipitation, by the addition of water, being a peculiarity of bismuth, serves as a very excellent test of this metal. The magestens of bismuth, from its whiteness, is sometimes employed to improve the complexion, as well as the *pearl powder*, a similar preparation, differing only by the mixture of a little muriatick acid with the nitrick acid in effecting the solution of the bismuth. The liberal use of either, however, is highly prejudicial to the skin. They are, besides, liable to be turned black by the vapours evolved from nearly all putrefying substances. The chloride of bismuth, formerly termed *butter of bismuth*, is formed by pouring bismuth, in fine powder, into chlorine gas, or by depriving the muriate of bismuth of its water of crystallization by heat.

Envy is unfortunately one of the most natural passions which agitate the mind of man. If we do not envy another's merit we envy, at least, his reputation, which is the consequence of that merit. We admire a reserved man of abilities, because we, at the same time, think we shall discover his hidden abilities, and because we thereby pay a compliment to our own penetration and judgement. Where the veil of reserve is wanting, to deserve esteem is often a hinderance to the attainment of it.

THE SCIENCE OF GEOLOGY.

[From the Glasgow Treatises, with additions.]

THERE is no science—not even excepting astronomy—so deeply interesting as geology, whether in a popular or scientifick point of view, and yet there is none so little known. Several causes have contributed to this. For example, many people are apt to confound this science with mineralogy, and so regard it as a dry study of the qualities of rocks. Another, and perhaps a principal cause, is the alleged discordance between its doctrines and the terms of the Mosaic history. We trust to be able to show that there is no such discordance; but, at present, we would simply remark, that nothing can be more absurd than to allow such an *allegation* to prevent us from prosecuting the study of any science. The Bible is given to us, not as a history of the physical changes which have occurred in the history of our globe, but as a revelation of those truths which divine wisdom has considered necessary for our moral guidance and direction. There are statements in the Bible which we cannot explain, and there are thousands of instances in the material world where we are equally at fault. And should it be cause of wonder that we cannot reconcile the appearances of the crust of our earth with the short and condensed history given by Moses? As well might we denounce the study of astronomy, because we are told, in the history of Joshua, that the sun "stood still"—and thus imitate those who cast Galileo into the dungeons of the Inquisition for having discovered the motion of the earth. If the Christian religion be true, it will be illustrated and confirmed by every new discovery in physicks. Such has been the case with every science, and it must be the same with geology.

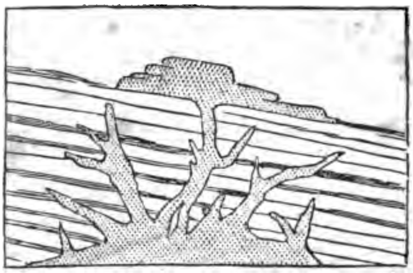
In a little treatise like this, it will of course be impossible to enter into all the technical and scientifick details involved in the subject. Such is not our object. We propose simply to give a popular account of some of the more interesting phenomena of which geology treats, and then notice those doctrines to which recent discussions have given prominence.

CLASSIFICATION OF ROCKS.

The rocks which compose the crust of our earth may be arranged under two general divisions—the unstratified and the stratified. The former are of igneous origin, and are destitute of organick remains. The latter are disposed in beds or strata, are of aqueous origin, and (except the primary rocks,) contain the fossil remains of plants and animals.

UNSTRATIFIED ROCKS.

The igneous or unstratified rocks form an extensive group, in which granite and lavas occupy a prominent part. Porphyry, diallage, pitch-stone, basalt, scoria, and the trap-rocks, belong to the same series. All these substances possess evidences of a common origin, and they all exhibit the same geological phenomena. Unlike the stratified, however, we have no means of judging of the relative antiquity of igneous rocks, for we find them associated with strata of all characters, and of all ages. Sometimes they appear at the very surface, and at others they are only found at great depths. At the same time there are certain rules by which we may ascertain, in special circumstances, their relative antiquity, as compared with adjacent rocks. For example, if we find a mass of granite penetrating a particular stratum, breaking it up, and branching through it in veins, we must conclude, that here the granite is the more recent of the two; that is, that it assumed its present position subsequently to the formation of the stratum which it traverses.



The above figure represents granitick veins, branching through stratified rocks, and overlying them at the surface. The proofs of the igneous origin of the unstratified rocks is very complete. Not only does their structure establish it, but we find that wherever they have been erupted into or through the stratified rocks, the texture of the latter, at the point of contact, exhibits the marks of the action of intense heat. Thus, wherever the slate-rocks are intersected by granitick veins, they assume the appearance of mica-slate or hornblende; beds of shale and sandstone are reduced to jasper; and compact limestone and chalk are converted into crystalline marble.

STRATIFIED ROCKS.

These have been classed under the following divisions:

1. *The primary*, consisting of gneiss, quartz, hornblende, &c., but containing no organick remains.
2. *The transition*, presenting alternations of slate and shale, with slaty sandstone, limestone, and conglomerate rocks, and containing remains of fishes, shells, and vegetables. The coal-formation belongs to this division.
3. *The secondary*, which include the lias and oolite formations, various limestones, variegated sandstone, conglomerates, and others. They are richer in organick remains than the transition-rocks. We here find gigantick lizards of the most extraordinary description, with turtles, opossums, and kangaroos, and various kinds of trees and plants.
4. *The tertiary rocks*, consisting chiefly of alternating strata of marine and fresh-water deposites, and containing in great abundance the remains of animals and plants, approaching in genus or species to those which at present inhabit our continents and seas.

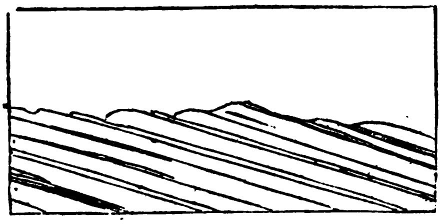
The igneous and primary rocks constitute, mainly, the hills of New England, and the mountain-group in the northern part of New York; also, the Blue ridge and its collateral elevations, extending southwesterly through the Atlantick states.

The transition and secondary rocks, but chiefly the former, constitute the greatest portion of the interiour of the United States, west of New England

The tertiary deposites constitute a large portion of the shores and low country of the states south of New England, and bordering on the Gulf of Mexico.

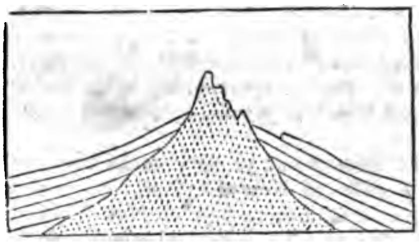
ARRANGEMENT OF STRATA.

It was one of the many absurd doctrines taught by Werner, that strata were arranged in beds parallel to the horizon, and that they succeeded each other in regular coatings round the world, like the peelings of an onion. This is not the case. They are generally inclined at greater or less angles to the horizon, and their ends or edges *crop out* at the surface from under each other, in this manner:

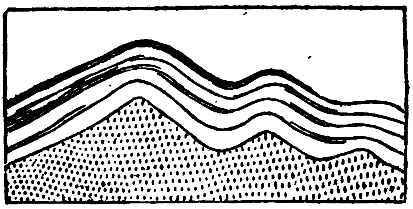


Were the arrangement otherwise, we would have remained for ever in ignorance of many of the lower rocks, because we could only have reached them by cutting through enormous superincumbent masses of impenetrable thickness. Coal, for example, would have been unknown to us, and also the metals in which the inferiour strata abound. But in consequence of the admirable arrangement of nature, we obtain easy access to all the different rocks; and, what is of equal importance, we find them not all together, but distributed in different districts. As we walk over a country, we come perhaps upon the *out-crop* of primitive rocks; and here, though dreary and barren, the country is wild and romantick, and affords valuable minerals. We advance upon more recent formations, where we have no minerals, but where we find a district rich in agricultural produce. Farther on, it may be we come to strata abounding in coal, and affording scope for the exercise of manufacturing industry.

Strata are not only elevated at an angle, but we often find them twisted and contorted in various forms, according as they have been acted upon by the igneous agents which disturbed their original tranquillity. Sometimes they are broken in the middle by the eruption of an igneous rock, and lie on either side of the intruded mass, thus:



In other instances, where the strata are more elastick, they assume a contorted form, in this manner:



AGE OF ROCKS.

The relative antiquity of stratified rocks is determined by their order of superposition, and by the organick remains of animals and plants imbedded in them. Thus, the aqueous deposites of the present period, those which we see forming under our own eyes, and which inclose the remains of vegetables scarcely altered, and of animals still living on the surface of the globe, are the uppermost of all the others. Immediately below these comes the diluvium, of the nature of which little is known. Continuing to descend, we meet with rocks, the remains inclosed in which, differ more and more from those of our day. At last we arrive at the crystalline stratified rocks, the mica-slate, and the gneiss, in which no traces of organick remains have yet been discovered, and which are hence called *primary*. Thus in stratified groups, the oldest of two rocks is always that which is lowest.* These different groups again are subdivided into formations; and, independently of superposition, we judge of their relative ages, and of the length of time which must have elapsed between them, by the fossils peculiar to each. To take the tertiary rocks for example. This series has been arranged under four chronological divisions. In the oldest, out of twelve hundred shells found in the strata, not fifty belong to existing species. In the second, out of one thousand, we have about one hundred and seventy still surviving. In the next, from a half to a third of the shells now exist; and in the fourth, or most recent, almost all the imbedded shells belong to species still living in our seas. In Sicily, portions of the last-mentioned, or *newest* formation, rise to the height of two thousand feet, and contain shells and corals which are at present found in the Mediterranean.

PEAT.

Of recent formations peat is one of the most curious. It is a substance derived from the matter of decomposed vegetables, and is, in all probability, the origin of coal. It generally forms a stratum on the alluvial soil, but in some cases it alternates with sand, gravel, clay, or beds of shells; thus forming the rudiments of future coal-strata. Peat can only be formed under a particular temperature, and moisture is essential to it. In hot climates it can only be formed under water, or in elevated places, for otherwise the decomposition of vegetable matter would be too rapid. But in cold climates it may be formed at the level of the sea. In England, it is principally formed from a species of moss, growing in damp situations. Forests which have been overthrown by storms—and instances of such have been frequent—often contribute to form peat. The decay of the leaves and small branches commences the process, and the interstices are gradually filled up, until the trunks are enclosed and covered. Hence the frequent occurrence of the remains of trees, both in the peat and coal-formations. These trees are sometimes so numerous as to form, in fact, fossil forests. In the valley of the Somme, a mass of peat reposes on an immense quantity of the branches and trunks of dicotyledonous trees heaped on each other, and resting on clay. On the borders of the Rhine there exist similar masses, in which the trunks are so flattened, that trees of a foot in diameter present a thickness of only two inches.*

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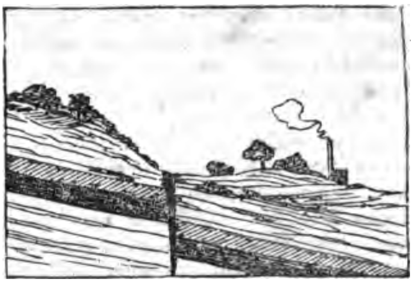
* M. Rozet, Traité Elémentaire de Géologie. p. 152.

COAL.

Of the *vegetable* origin of this most valuable mineral, there can be no question. Its whole appearance, the numerous remains of plants which it incloses, and the large quantity of carburetted hydrogen which it gives forth, leave no doubt on this point. We may suppose that islands of greater or less extent were covered with a vigorous and luxuriant vegetation—the united effects of heat and moisture; that these, by their decomposition, produced beds of peat, of various extent and thickness, in valleys which opened toward the sea; and that these beds had been subjected to great pressure—perhaps by submergence under the ocean—by means of which, aided, probably, by some degree of heat, they were converted into coal. The coal-formation is common to countries the most opposite, at present, in point of temperature. It occurs in India and in England, in America and in New Holland, in Greenland and in Chili. The fossil flora which it contains is rich beyond all conception. Of ferns alone, no less than a hundred and twenty species have been already discovered in it, most of them extinct.

The coal-formation consists of beds alternating with strata of what is called *shale*, and of ironstone and sandstone, in irregular succession, and varying in almost every section. These strata are generally inclined, and often at a very high angle, and *unconformable*, that is, not parallel, to the strata above them. A curious peculiarity of the coal, and one which in Europe, greatly assists in working it, is the *faults* which constantly occur in the beds. These are caused by fissures traversing the strata, extending often for miles, and penetrating to a depth in very few instances ascertained. They are accompanied by a subsidence of the strata on one side, or an elevation on the other, and sometimes by both. These breaks or dislocations have been caused by violent mechanical convulsions, subsequent to the original formation of the strata; and as the change of level sometimes exceeds five hundred feet in perpendicular height, the power which could move upward such enormous masses, must have been very great. That that power was volcanick there can be but one opinion. The rents or fissures are usually filled up with clay. Some idea of these *faults* may be formed from the subjoined cut.



Had these beds of shale and sandstone, which alternate with the coal, been continuously united without fracture, the quantity of water that would have penetrated from above, into any considerable excavation made in the porous beds, would have been insuperable; whereas, by the occurrence of a series of faults, such as I have described, the component strata of a coal-field are divided into numerous isolated masses, each separated from its next adjacent mass by a wall of clay, through which the water cannot penetrate, and thus each mass or seam is wrought separately, and with ease.

Some modern writers—well-meaning men, but wofully ignorant of geology—have averred that the sin of our first parents was followed by great natural convulsions; and they appeal to the dislocation of stratified masses in proof of this.† To say nothing of the date of these dislocations, (which, in regard to many of them, must have been long anteriour to the time when man came upon the earth,) it is a sufficient answer to such a hypothesis, that the dislocations in question (as we have seen,) are of the most essential benefit to us. Similar convulsions caused the present inclined position of all strata, for originally they were deposited horizontally; and thus, so far from such convulsions being a curse, the earth but for them would have been uninhabitable.

SANDSTONE.

Various extensive formations of sandstone exist in all the series of the stratified rocks. It has been produced by the decomposition of older rocks, of which evidence is exhibited in its structure. The old red sandstone, for example, is constituted of quartz, felspar, and mica. In the more recent sandstone, fossil remains of trees and plants are very common. The interiour of the plant is usually filled up with the sand, while the bark is converted into coal. Shells, encrinites, and other fossils, are also found in this formation.

The new red sandstone constitutes a formation of some extent in the eastern part of New Jersey, and on the western border of the Hudson, below the highlands. Also, in the valley of the Connecticut resting on the primitive, from near the line of Vermont to the shore of Long Island, near New Haven. Fossil fishes are found in this formation, in layers of shale, which are interstratified with the sandstone.

LIMESTONE.

The more recent limestone has been formed, partly from the secretions of shells and corallines, and partly from the decomposition of the ancient limestone rocks. Whence the primary limestone was derived is yet unascertained; but some geologists are of opinion, that it has *all* been formed from corals and shells, or other marine exuviæ. The whole formation composes nearly one-eighth part of the superficial crust of the globe, and it appears to have been formed both in fresh water, and in the sea. We have instances of its occurrence at the present day, of which the lake of Bakie, in Forfarshire, in Scotland is an interesting example. Magnesian or conglomerate limestone differs from the common limestone, in that it contains a large proportion of magnesia, and is of a granular sandy structure. The mountain-limestone contains many crevices, cavities more or less deep, and vast caverns, (hung with stalactites) some of which contain the bones of extinct animals.

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* M. Rozet, p. 192.

* See Dick's Christian Philosophy &c.

CORAL REEFS.

These are among the most interesting phenomena in geology. When we view the enormous masses of which they consist, forming reefs in the ocean, of hundreds of miles in extent, and rising into extensive islands, and consider that all this is the work of an animal so insignificant as to be hardly discernible, we are lost in wonder and admiration. The way in which the corals work is curious. The windward side of the structure, which is exposed to the break of the sea, rises vertically like a wall; while to the leeward, it shelves away. This enables them to work with facility, for they are thus protected from the violence of the waves, which would otherwise impede or destroy them. There are two kinds of these animals distinguished by M. Lesson. One, which he calls *zoophytes saxigènes*, are employed in the construction of the exteriour walls. The other, the *saxigènes delicats*, are protected by the first, and never work except in shallow basins, where the water is warm. The coral-formations, though extensive, are not of great height. Some have supposed that these animals build from the bottom of the sea, but this is nonsense. They begin their work on rocks or banks already near the surface; and, in fact, the reefs of the Indian ocean rarely exceed three hundred feet in height.

The first appearance of the reef, above the surface, consists of detached rocks or little islands, forming a sort of chain, which gradually becomes joined, until a circular basin is formed. This basin is at last contracted by additional works, till finally, all communication with the sea is cut off; and then, as the rain gradually freshens the water, the animals die. These masses of rock are frequently elevated to a considerable height above the surface of the ocean, by volcanick action, and thus become islands; while the basins just described, being filled with rain, form lakes affording a supply of fresh water to the future inhabitants. The action of water, and of the atmosphere, in course of time, decomposes the more exposed portion of the rock, and forms an alluvial soil. Seeds of plants float toward it, or are carried by the wind, and light there, and form a vegetation. Birds resort to it. The eggs of various insects, and other oviparous animals, are conveyed to it, in the same way as seeds. Thus the soil comes to be inhabited; and man at last comes, and forms a settlement. Such is the history of islands generally. Raised at first above the ocean, bare and barren rocks, they become gradually clothed with the luxuriance of vegetation, and form the receptacles of animal life. Some coral islands rise to the height of three hundred feet above the level of the sea, and extend many miles in length.

Remains of coral are found in the interiour of New York and other states, west of the Alleganies; certain varieties of which are sometimes known among the inhabitants by the name of petrified wasps-nests.

CHALK.

This formation appears to have been entirely composed of the accumulation of marine shells, which have been gradually consolidated, with little intermixture of foreign matter. The finest is nearly of a pure white, and that found near Paris yields about ninety-eight per cent. of carbonate of lime. One of the most characteristick circumstances attending the chalk, is the occurrence of flints, which are constantly present in the upper beds, and often in large quantities. They occur but rarely in the lower. The chalk contains a certain quantity of silex, and at the period of its formation, a considerable quantity of this substance appears to have been precipitated along with it, but still containing water. Hence it may have united into masses, especially where organick remains were present, and thus produced the flints which often retain the form of sponges, &c. The theory of flints, however, is not without much difficulty.

In Scotland, no chalk at present exists; but the occurrence of flints in considerable quantities, in Aberdeenshire and other places, affords unequivocal evidence of the former presence of cretaceous strata, now disintegrated. The soft chalk has been exposed to the action of rain and storms, and has been gradually washed away, while the flints which were embedded in it still remain. The chalk is extremely rich in organick remains of shells, starfish, sponges, fishes, and lizards. There are also several aquatick plants.

No chalk has yet been found upon the American continent.

ROCK-SALT.

No satisfactory theory has yet been advanced to account for the occurrence of this extensive formation. Some have maintained that it was produced from the ocean, but in what way they do not explain; and it is difficult to suppose how it could have been so, for salt water contains many ingredients not found in this rock. The strata above it contain organick remains, as do also those below, but of a different kind. The salt contains none. From this, some have inferred, that the formation took place during the epoch which elapsed between the destruction of one creation, and the calling of another into existence. In point of fact, however, this is one of those matters in regard to which geologists can only theorise. There can, however, be only one opinion as to the importance of the formation, and of the evidence which it affords of the wisdom and goodness of the Creator; for it is essential to the existence of the inhabitants of numerous inland countries, whose access to the sea is difficult or impracticable. Rock-salt in Europe, belongs to the secondary series.

NATURAL PHILOSOPHY

PNEUMATICKS.

This term is usually restricted to that part of natural philosophy which treats of the mechanical-properties of elastick fluids. The word, in its original meaning, expresses a quality of air, or more properly of breath.

It is common to extend the term pneumaticks to the study of the mechanical properties of all elastick or sensibly compressible fluids, that is, of fluids whose elasticity and compressibility become an interesting object of our attention; as the term hydrostaticks is applied to the study of the mechanical properties of such bodies as interest us by their fluidity or liquidity only, or whose elasticity and compressibility are not obviously familiar to the senses, though not less real or general than in the case of air and all vapours.

It may be proper to remark that there is no precise limit to the different classes of natural bodies with respect to their mechanical properties. There is no such thing as a body perfectly hard, perfectly soft, perfectly elastick, or perfectly incompressible. All bodies have some degree of elasticity intermixed with some degree of ductility. Water, mercury, and oil, are compressible; but their compressibility need not be attended to in order perfectly to understand the phenomena consequent on their materiality, fluidity, and gravity. But, if we neglect the compressibility of air, we remain ignorant of the cause and nature of its most interesting phenomena, and but imperfectly informed with respect to those in which its elasticity has no share; and it is convenient to attend to this distinction in our researches in order to understand those phenomena which depend solely or chiefly on compressibility and elasticity. This observation is important; for here elasticity appears in its most simple form, unaccompanied with any other mechanical affection of matter, (if we except gravity,) and lies most open to our observation, whether employed for investigating the nature of this very property of bodies, or for explaining its mode of action. We shall even find that the constitution of an avowedly elastick fluid, whose compressibility is so very sensible, will give us the distinctest notions of fluidity in general, and enable us to understand its *characteristick appearances*, by which it is distinguished from solidity, namely, the *equable* distribution of pressure through all its parts in every direction, and the horizontality which its surface assumes by the action of gravity; phenomena which have been assumed as equivalent to the definition of a perfect fluid, and from which all the laws of hydrostaticks and hydraulicks have been derived.

Of all the sensibly compressible fluids, air is the most familiar, was the first studied, and the most minutely examined. It has therefore been generally taken as the example of their mechanical properties. By mechanical properties we would be understood to mean such as produce or are connected with sensible changes of motion, and which indicate the presence and agency of moving or mechanical powers. They are therefore the subject of mathematical discussion, admitting of measure, number, and direction, notions purely mathematical.

It is by no means an idle question, "What is this air of which so much is said and written?" We see nothing: we feel nothing. We find ourselves at liberty to move about in any direction without any let or hinderance. Whence then the assertion, that we are surrounded with a matter called air? A few very simple observations and experiments will show us that this assertion is well founded.

We are accustomed to say that a vessel is empty when we have poured out of it the water which it contained. Take a cylindrical glass jar, having a small hole in its bottom, and, having stopped this hole, fill the jar with water, and then pour out the water, leaving the glass empty, in the common acceptation of the word. Now throw a bit of cork or any light body on the surface of water in a cistern; cover this with the glass jar held in the hand with its bottom upward, and move it downward, keeping it all the while in an upright position. The cork will continue to float on the surface of the water in the inside of the glass, and will most distinctly show its precise situation. It will thus be seen that the water within the glass has its surface considerably lower than that of the surrounding water; and, however deep we immerge the glass, we shall find that the water will never rise in the inside of it so as to fill it. If plunged to the depth of thirty-two feet, the water will only half fill it; and yet the acknowledged laws of hydrostaticks tell us that the water would fill the glass if there were nothing to hinder it. There is therefore something already within the glass which prevents the water from getting into it, manifesting in this manner the most distinctive property of matter, viz., the hindering other matter from occupying the same place at the same time.

If we now withdraw the stopper from the hole in the jar, the water will instantly rise and stand at an equal height within and without. This is justly ascribed to the escape through the hole of the matter which formerly obstructed the entry of the water. The materiality of air is inferred from this appearance in the same manner as the materiality of water is concluded from the impulse of a jet from a pipe. We also see the mobility of the formerly pent-up and now liberated substance, in consequence of external pressure, viz., the pressure of the surrounding water.

It is not accurate to say that we move about without any obstruction; for we find that if we endeavour to move a large fan with rapidity, a very sensible resistance is perceived, and that a very considerable force must be exerted; and the wind will agitate the neighbouring bodies. It is therefore justly concluded that the motion is possible only in consequence of having driven this obstructing substance out of the way; and that this impenetrable, resisting, moveable, impelling substance is matter. We perceive the perseverance of this matter in its state of rest when we wave a fan, in the same manner as we perceive the inertia of water when we move a paddle through it. The effects of wind in impelling our ships and mills, in tearing up trees, and overturning buildings, are equal indications of its perseverance in a state of motion.

To this matter when at rest we give the name of air; and when in motion we call it wind.

Air, therefore, is a material fluid: a fluid, because its parts are easily moved, and yield to the smallest inequality of pressure.

Air possesses some others of the very general though not essential properties of matter. It is *heavy*. This appears from the following facts :—

It always accompanies this globe in its orbit round the sun, surrounding it to a certain distance, under the name of the atmosphere, which indicates its connexion with the earth by its general force of gravity. It is chiefly in consequence of this that it is continually moving round the earth from east to west, forming what is called the tradewind. All that is to be observed on this subject at present is, that in consequence of the disturbing force of the sun and moon there is an accumulation of the air of the atmosphere, in the same manner as of the waters of the ocean, in those parts of the globe which have the moon near their zenith or nadir; and as this happens successively, going from the east to the west, (by the rotation of the earth round its axis in the opposite direction,) the accumulated air must gradually flow along to form the elevation. This is chiefly to be observed in the torrid zone; and the generality and regularity of this motion are greatly disturbed by the changes which are continually taking place in different parts of the atmosphere from causes which are not mechanical.

But there are many very familiar phenomena which are immediate consequences of the air being a heavy fluid. Thus, for instance, if we shut the nozzle and valve-hole of a pair of bellows after having squeezed the air out of them, we shall find that a very great force, even some hundred pounds, is necessary for separating the boards. They are kept together by the pressure of the heavy air which surrounds them in the same manner as if they were immersed in water. In like manner, if we stop the end of a syringe after its piston has been pressed down to the bottom, and then attempt to draw up the piston, we shall find a considerable force necessary, viz. about fifteen pounds for every square inch of the section of the syringe. Exerting this force, we can draw up the piston to the top, and we can hold it there; but the moment the action of the hand ceases, the piston rushes down and strikes the bottom. It is to the pressure of atmospherick air we must attribute many phenomena of daily observation; as, for example, the great force with which two surfaces that accurately fit cohere to each other; we do not here mean to assert that the cohesion is not frequently greater than can be due to atmospherick pressure, but in many cases this is the principal cause. This fact is familiarly known to glass-grinders and the polishers of marble; in these operations, when the polish is nearly completed, the glass and the tool on which it is ground will adhere to each other with a force requiring more than the strength of a man to separate them; in fact, we shall see hereafter that every square inch of surface will require a force of fourteen or fifteen pounds to produce a separation, independently of any other cause than the pressure of the atmosphere; whereas, in a vacuum, the connexion is destroyed without any effort.

To the same cause must be ascribed the very strong adhesion of snails, periwinkles, limpets, and other univalve shells, to rocks, &c. The animal forms the rim of its shell so as to fit the shape of the rock to which it intends to cling. It then, by means of some muscular exertion, produces a sort of vacuum, and in this condition it is evident that we must act with the above force of fifteen pounds for every square inch of adhering surface, before we can detach it. This will be illustrated if we fill a drinking-glass to the brim with water, and, having covered it with a piece of thin wet leather, place it on a table, and then try to pull it straight up, when it will be found to require a considerable force. In the same manner do the polypus, the lamprey, and many other animals, adhere with that firmness which we so frequently observe. Those animals also which possess the power of walking in opposition to gravity, as flies, for example, on the ceiling of a room, or on the smooth perpendicular surface of a lookingglass, owe their facility of support to a peculiar construction of the feet, which enables them to produce a vacuum by mere muscular operation. Naturalists were long perplexed with this phenomenon, and it is but lately that Sir E. Home, by means of a very accurate examination of the foot of a peculiar sort of lizard, the *lacerto gecko* of Java, (which possesses the same power,) has been able to discover the cause.

In the common leather *sucker*, with which boys amuse themselves by raising large stones from the pavement by means of a circle of stiff wet leather fastened to a string, the adhesion must also be attributed to the atmospherick pressure: and to the same cause is owing the firmness with which bivalve shellfish appear to close themselves.

To the pressure of the air is to be attributed the well-known fact that a cask will not run by the cock unless a hole be opened in some other part. If the cask be not quite full, indeed, some liquor will be discharged, but it will stop, after a time, till an opening be made, as before stated. For the same reason we commonly see a small hole made in [illegible] lid of a teapot; for if that were not done, and the lid were to fit very accurately, we should, for want of the atmospherick pressure inside, be unable to pour out the tea through the spout. It seems principally owing to a like cause that a frost immediately occasions a scantiness of water in our wells and springs This is erroneously accounted for by supposing that the water freezes far below the surface of the earth. But this is a great mistake; the most intense frost of a Siberian winter would not freeze the ground two feet deep, but a very moderate frost will consolidate the whole surface of a country, and make it impervious to the air, especially if the frost have been preceded by rain, which has soaked the surface. When this happens, the water which was filtering through the ground is held suspended in its capillary tubes by the upward pressure of the air, and a scarcity of supply is the necessary consequence. A thaw, by melting the superficial ice, again opens the communication with the atmosphere, and the flowing of the water is renewed.

That air is an elastick fluid, and capable of compression and expansion, may be shown by a great variety of methods, particularly with the assistance of the airpump; and, even independently of this machine, it may be rendered evident by numberless experiments; as, for example, by squeezing in the hand a blown bladder, in which case we find an obvious resistance from the included air, and, upon taking off the pressure, the compressed parts immediately restore themselves to their former round figure. The elastick and compressible quality of common air may also be shown by inverting an open glass vessel, and immersing it in a fluid: in the first instance, viz., when the orifice of the vessel first comes in contact with the water, the whole internal space of the vessel will be occupied by the air, but, on forcing it downward to a greater depth, the pressure of the fluid will act upon the surface of the air in contact with it, and force it to occupy a less and less space, as the vessel is more and more immersed. This shows the air to be compressible; and if the power be removed that caused the vessel to descend, and which has kept it at any given depth, it will reascend with considerable force, which demonstrates the air to be elastick and expansible; for, had it been incompressible, the water could not have entered; and had it been merely compressible, without possessing elasticity, it would not have reascended with the force above described.

Other experiments are sometimes cited to prove the above quality of atmospherick air, viz., by the great expansion of a small quantity of air in a bladder, apparently nearly empty, when the air is removed from the external parts, by placing it under the receiver of an air-pump. This experiment is sometimes performed by placing the flaccid bladder in a small box, and laying a proper weight on the lid, when, on exhausting the air externally, the lid will be raised up by the expansion of that in the bladder.

Every particle of air possesses this property, and tends to expansion, and thus counteracts an equal tendency of the ambient particles; and, if the resistance of any of these happen to be weakened, it immediately diffuses itself to an immense extent. Hence it is that thin glass bubbles, and bladders filled with air and exactly closed, being included in the exhausted receiver of an airpump, burst by the force of the included air.

The limits of condensation and rarefaction of air, by artificial powers, are not ascertained. Certain experiments of General Roy, detailed in vol. lxvii. of the *Phil. Trans.*, render it probable that the particles of air may be so far removed from each other, by the diminution of pressure, as to lose a very considerable portion of their elastick force. It also appears that the elastick force of common air is proportionally greater than when its density is considerably augmented or diminished, by an addition to, or a substraction from, the weight with which it is usually loaded, a fact which contradicts the experiments of Boyle, Mariotte, and others. These experiments also further show that the elasticity of moist air is greatly superiour to that of dry air; in some cases the total expansion of the former was quadruple that of the latter. Philosophers have doubted whether this elastick power of air was capable of being entirely destroyed. Mr. Boyle made several experiments with a view to discover how long air, brought to the greatest degree of expansion to which he could reduce it, would maintain its spring, and could never discern any sensible diminution.

Desaguliers found that after air had been enclosed for half a year in an air-gun it had lost none of its original elasticity; and Roberval, after preserving it in the same manner for sixteen years, found that its expansive projectile force was the same as if it had been recently condensed. Hawksbee, however, from a later experiment, concludes that the spring of the air may be so disturbed by a violent pressure as to require some time to return to its natural tone: and Dr. Hales inferred, from a number of experiments, that the elasticity of the air is capable of being impaired and diminished by a variety of causes, so as to be actually destroyed and reduced to a fixed state: hence he concludes that elasticity is not an essential and immutable property of the particles of air; and that the atmosphere is a chaos, consisting not only of elastick, but also of nonelastick air-particles, which copiously float in it. This philosopher found that when dry wood was put into a strong vessel, which it almost filled, and the remainder was filled with water, the swelling of the wood occasioned by its imbibing the water, condensed the air of his gauge into one-thousandth of its original bulk. He found also that peas, treated in the same manner, generated elastick air, which, pressing on the air in the gauge, condensed it into a fifteen-hundredth part of its bulk. This is the greatest condensation that has been ascertained with precision, although, in other experiments, it has certainly been carried much further; but the precise degree could not be ascertained.

The elasticity of the air exerts its force equally in all directions, and, when released from the force which compresses it, assumes a spherical figure in the interstices of the body which contains it. By exhausting the air from liquors placed under the receiver of an airpump, the bubbles which gradually arise, and are enlarged in size, retain their round figure. Such are also the bubbles discharged from a piece of wood immersed in a fluid under the same circumstances. On this account large glass globes always assume a spherical shape by blowing air through an iron tube into a piece of melted glass at the end of the tube. How far air has a power to dilate itself when all external pressure is removed is uncertain, although we know that it possesses this power in a very high degree. In several experiments made by Mr. Boyle, it dilated into nine times its former space, then into thirty-one, then into sixty, and lastly into one hundred and fifty: but it was afterward dilated into eight thousand times its first space, and ultimately into thirteen thousand six hundred and seventy-nine times its original bulk; and this without the assistance of fire. It appears, therefore, from what has been above stated, that the air we breathe near the surface of the earth is compressed by the weight of the superincumbent column of air into at least the thirteen thousandth part of the space it would occupy in vacuo; but, if the same air be condensed by art to the greatest degree hitherto effected, the ratio of the spaces occupied by the same quantity of air in its greatest state of rarefaction to the same under its highest degree of condensation will be as fifty-five thousand to one.

The weight or pressure of the air, it is obvious, has no dependance on its elasticity, and would be the same whether it possessed the latter property or not; but, being elastick, it is necessarily affected by the pressure, which reduces it into such a space as that the elasticity which reacts against the compressing weight is equal to that weight. Indeed, the law of this elasticity is, that it increases as the density of the air increases, and the density increases as the force increases with which it is pressed, at least within certain limits, and there must necessarily be a balance between the action and reaction; that is to say, the gravity of the air which tends to compress it, and the elasticity of the air which has a tendency to expand it, must be equal; hence the elasticity of the air, not very different from its natural state, being as the density, will of course be inversely as the space it occupies. Consequently, since the elasticity increases or diminishes as the density increases or diminishes, (that is to say, as the distance between the particles diminishes or increases,) it is indifferent whether the air be compressed and retained in such space by the weight of the atmosphere, or by any other means; for it will, in either case, have a tendency to expand with the same force. Therefore, if air near the earth be confined in a vessel shut on all sides, so as to cut off all communication with the external air, the pressure of the enclosed air will be equal to that of the atmosphere. Accordingly we find mercury sustained to the same height by the elastick force of air enclosed in a glass vessel as by the whole atmospherick pressure.

We may now examine the effects which result from expanding atmospherick air. This property is rendered obvious by means of a very simple experiment. If, for example, we tie a bladder very close with some air in it, and lay it before a fire, as it experiences the heat, the bladder will become more and more distended, and, if the heat be continued long enough, will at last burst, provided there was a sufficient quantity of air in the bladder at first. If now the bladder be removed from the fire, as it cools it will contract again as before, and assume its original figure and volume. It is on this principle that the first fire-balloons of Montgolfier were made to ascend. Another experiment, which shows the rarefaction of air by heat, and its return afterward to its former bulk, is as follows:—Take a wine-glass that may be completely covered by the palm of the hand; light a small piece of paper, and put it while burning into the glass, by which means the contained air is greatly expanded: now, while the paper is still on fire, cover the mouth of the glass with the hand; the fire is immediately extinguished and the air is soon cooled, when the external air pressing with a greater elastick force than the air inside, in consequence of the rarefaction of the latter, the hand will be pressed with very considerable force into the glass, and it is with some difficulty that it is afterward removed.

With respect to the entire weight of the atmosphere, it depends partly upon its height and partly upon its density, which, with its consequent pressure, are properties we have already examined as far as regards any particular base; and it is obvious that the actual weight may thence easily be determined. For since a column of quicksilver of thirty inches, at a medium, will counterbalance an atmospherick column of indefinite height having an equal base, it follows that the entire pressure which the weight of the atmosphere produces on the surface of the earth is the same as would arise from a quantity of mercury enveloping it on all parts to the depth of thirty inches, or as a mass of water whose depth is thirty-four feet, which Cotes, in his *Hydrostatical Lectures*, computes to be equal to the weight of a globe of lead sixty miles in diameter.

The difference of the weight of the atmosphere, and of its consequent pressure at different times and in different situations, is a circumstance peculiarly interesting. The variation of pressure in the same situation arises from changes in the state of the atmosphere, and it chiefly occurs at places some distance from the equator: it is indicated, and of course easily estimated, by the different heights to which the mercury is raised in the barometer. The greatest variation in the height of the mercurial column occupies a range of about three inches, that is, from twenty-eight inches to thirty-one inches, being one tenth of the whole medium height: therefore, a column of air of any given base, equal to the weight of a cylinder of mercury of the same base, and of the altitude of three inches, will be taken off from the pressure upon a body at those times when the mercury is three inches lower in the barometer, and consequently every square inch base on any body is at one time pressed more than it is at others by a weight equal to three cubick inches of mercury. It is commonly estimated that a man of medium size sustains on his body about fifteen tuns weight from the pressure of the atmosphere; but it follows that this is sometimes reduced to thirteen tuns and a half, or that a man is subject to a variation of pressure equal to a tun and a half: it is not, therefore, astonishing that we should be so sensible of those great changes in the state of the weather; it is rather, on the contrary, surprising that such changes do not produce a much more obvious effect upon our constitutions.

It is difficult to assign the true cause of the variations of atmospherick weight and pressure that occur in the same situation. In places within the tropicks, where such variations are not very considerable, the chief cause appears to be the heat of [illegible] sun; and its effects are regular and uniform, the mercury in the barometer subsiding about half an inch in the day, and ascending again to the same height during the night. In the temperate zones, the changes are much greater, extending, as we have stated above, from twenty-eight to thirty-one inches, the mercurial column showing, by its various altitudes, corresponding variations in the weather. The causes which influence the one produce also a similar effect on the other; therefore, if the former were known, the latter might be ascertained. The immediate causes may probably be reduced to the two following, viz. an emission of latent heat from the vapours of the atmosphere, or of electrick fluid from these or from the earth. Both these causes are observed to produce the same effect with the solar heat in tropical climates, that is, they both rarefy the air, by blending with it, or setting loose a lighter fluid, which did not previously act with such power in any particular place.

It may now therefore be advisable to direct the reader's attention to a series of experiments illustrative of the use of the AIRPUMP in the science of pneumaticks. We have stated that the most certain mode of demonstrating the materiality of the air is to exhaust a strong copper vessel and then weigh it in the ordinary way: its pressure may be best shown by reference to the airpump. Place a receiver on the plate of the airpump, having a hole an inch or an inch and a half in diameter at the top;

cover this hole with the palm of the hand, while another person works the machine so as to produce the exhaustion; and the pressure which after two or three strokes of the piston will be experienced on the hand, from the external atmosphere, will be such as to convince the most sceptical of the truth of the proposition. If the exhaustion be carried to any considerable degree, it will be difficult to remove the hand without violence, or without readmitting the air.

The same may be otherwise shown by tying over the hole at top a piece of bladder; then, as the air is exhausted, the bladder will be pressed into the receiver in a concave hemispherical form, and, by carrying the exhaustion to a sufficient extent, the bladder will at length burst with a loud report; or, instead of the bladder, a piece of common window-glass may be employed, resting on a rim of leather, when it will be found that the pressure of the external air will break the glass as soon as the air is exhausted.

Join together two hollow brass hemispheres, the edges of which must be made very perfect, or otherwise they must have a circle of wet leather placed between them; screw the end into the plate of the pump, and open a stop-cock communicating with the hemispheres: and, having exhausted the air, turn the cock again so as to stop the pipe; remove the ball from the plate, and screw on a handle. Two strong men now, one taking hold of each handle, and pulling straight against each other, will find considerable difficulty, or will be, perhaps, wholly unable to separate the two hemispheres. The degree of strength that will be requisite depends upon the diameter of the sphere and the nature of the exhaustion. If the latter be nearly complete, and the diameter be four inches, the area of section will be

$$4^2 \times .7854 = 12.5664 \text{ inches};$$

and, assuming the pressure on every square inch to be about fifteen pounds, we shall have

$$12.5664 \times 15 = 188 \text{ pounds}.$$

for the force or strength requisite to produce the separation.

The pressure of the air may be also shown as follows:—Set a square vial of thin glass upon the pump-plate, and, to prevent accidents, cover it with a wire cage, and place both under a close receiver. The vial must be supplied at top with a small valve opening upward, so as to be exhausted with the receiver, but which shuts and prevents the air from afterward entering. Let the air be exhausted from the receiver and vial, and it will be found that, upon readmitting the air into the former, the latter will be crushed into a number of small pieces. Quicksilver may also be forced into the pores of wood, and made to pass through it by the pressure of the atmosphere.

The elasticity of air may be shown in the most satisfactory manner by placing under the receiver of an airpump a flaccid bladder, well tied and secured at its neck, so as to prevent the air within it from escaping. Exhaust the air out of the receiver, and the bladder, as the process proceeds, will continue to expand, till at length it will appear like one full blown, and even burst if the exhaustion be carried on to a sufficient degree; but, upon readmitting the air, it will quickly return to its original flaccid state.

We shall only detail one other experiment as a proof of the expansible property of atmospherick air. Every one must have observed a cavity at the broad end of an egg, between the shell and the white. The white and yolk are contained in a thin membrane or bladder, which adheres loosely to the shell, but is detached from it at that part; and this cavity increases by keeping the egg in a dry place. One may form a judgement of its size, and therefore of the freshness of the egg, by touching it with the tongue; for the shell, where it is not in contact with its contents, will presently feel warm, being quickly heated by the tongue, while the rest of the egg feels quite cold. If a hole be made in the opposite side of the egg, and it be set on a little tripod, and put under a receiver, the expansion of the air in the cavity of the egg will force the contents through the hole till the egg be quite emptied: or, if nearly one half of the egg be taken away at the other end, the white and yolk be taken out, the shell put under a receiver, and the air abstracted, the air in the cavity of the egg will expand, gradually detaching the membrane from the shell, till it causes it to swell out, and gives the whole the appearance of a whole egg. In like manner, shrivelled apples and other fruit will swell in vacuo by the expansion of the air confined in their cavities. And if a square vial of thin glass be placed in like manner, having its open end well corked and cemented, it will be burst into pieces by the expansive force of the included air. In this last case it is best to place the vial under a wire cage, to prevent the pieces of glass from damaging the principal receiver.

Bodies cannot move about in the atmosphere without displacing it, which requires force, and therefore the resistance of the air always diminishes the velocity of moving bodies; but this diminution will be greater or less according to the density of the falling or moving mass, for which reason those bodies which we call light, fall much slower than more dense or heavy substances. To show that this is actually the case, we need only let fall a feather and a piece of metal out of our hands at the same instant, and it will be found that the metal has reached the floor while the feather is yet falling; but place them both under the receiver of an airpump and exhaust the air, and then let them fall, and they will both be found to reach the bottom in the same time: the apparatus for performing this experiment usually consists of a brass plate made to fit air-tight on the top of a tall receiver, and provided with small arms for supporting a dollar and a feather, which, being placed on each other, are afterward discharged simultaneously.

There is another apparatus for showing the same thing. It consists of two sets of brass vanes put on separate axles, in the manner of windmill sails. One set has the edges placed in the direction of their whirling motion, that is, in a plane to which the axis is perpendicular. The planes of the other set pass through the axis, and they are, therefore, trimmed so as exactly to front the air through which they move. Two springs act upon pins projecting from the axis, and their strengths or tensions are so adjusted that when they are disengaged in a vacuum the two sets continue in motion equally long; but, if they are disengaged in air, those vanes which oppose the air by their planes will stop long before those that cut it edgewise.

METHOD OF PROCURING AND PRESERVING OBJECTS OF NATURAL HISTORY.

Of skinning Birds.—We have already given directions how to treat a bird when first taken; suppose you have him now in your hand.

If the feathers be bloody, you may restore the freshness and beauty of their colour in this way:—Dissolve a little soap in water, and wash them well; wash again with clear water, and sprinkle on your powdered plaster; this last repeated several times, will dry the feathers completely—it imbibes the water and forms a crust, which you must remove, and add more plaster.

Birdlime is taken out as before directed; but if the fat of the bird has exuded at the wound and stained the feathers, the operation is more difficult; the best method is this:—Apply a slight coat of spirit of turpentine with a camel's-hair pencil; wash it out with a solution of potash, then with alcohol, then with pure water; if the stain be tenacious, use the method recommended for the butter applied to the birdlime.

The first thing in skinning, is to empty the stomach, if it be distended; as its contents may escape by the mouth, and stain the plumage. Hold the bird up by the legs, and with the other hand squeeze the contents down to the mouth, where you may take them out with a little pains; dry up any humid matter at the mouth and elsewhere with plaster, and stop up with cotton; be careful not to deform any of these parts in the operation—for, as already remarked, naturalists have established characteristick divisions upon the shape of the nostrils and corners of the mouth.

If the bill is very short and pointed, so that you apprehend a difficulty in pulling it out from within the skin, when the latter is turned upon the head in skinning, as hereafter to be explained—pass a wire through the nostrils, and bring the two ends up into a knot; with this you may handle the beak, and hinder it from tearing the skin during the operation.

Lay the bird upon his back—the head to your left hand, the tail to your right; with the finger and thumb of the left hand draw aside the feathers down to the skin, in a line from the throat across the breast to the belly; cut through the skin along this line—the least pressure with the two fingers of the left hand will draw the edges of the incision apart; seize one of the edges with your nippers, and with the other hand, or the flat handle of your scalpel, detach the skin from the muscles as you raise it with the nippers. When you have skinned as far as you can go under the wing, sprinkle on plaster to keep the skin from the flesh, and take up the blood and fat; use the plaster for every such necessity; turn the bird, and operate the same on the other side, till he is skinned right and left up to the roots of the wings. Arrived at this spot, cut off the wings from the body with scissors, and be careful in this process not to break the skin—which accident is very common in the case of small birds. Detach the skin about the base of the neck, and cut off the neck as near as possible to the body.

You then come to the thighs, which cut off like the wings, at the joint of the *femur* and *tibia;*—this demands some explanation—few people give the right names to the different parts of this limb of a bird; the scaly part immediately above the claws, commonly called the leg, is named the *tarsus;* above this is the *heel,* then the *tibia,* then the *femur.*

The skin now adheres to the body only on the back and lower parts; turn the bird back upward, and draw the skin gently down, separating the muscles with your finger-nails; in approaching the tail, stop a little short of the insertion of the feathers—cut it off with the tail-feathers attached to the skin, and the body is then disengaged.

It remains to separate the skin from the other parts—to begin with the legs; strip the *tibia* as far as the *heel,* scrape the bone with the blade of your scalpel, and carefully remove the smallest particle of muscle or tendon; then give both skin and bone a good coat of the *preservative;* stuff the *tibia* with tow or cotton, to replace the flesh, and bring it to its natural shape.

Remove in the same manner all remnants of fat and muscle about the tail; apply a coat of the preservative, and stuff the part into shape. Treat in a similar manner the wings, but these last will require no stuffing.

Your next care is to strip the head; when you have drawn the skin down to the cavity of the ear, have a care that it does not break in this spot; detach this part from the head by raising it under the little bag formed by the membrane of the ear, plucking the extremity of this last out of the cavity of bone to which it is attached. Keep pulling down the skin till you reach the eyes, and cut the membrane which unites the eyelids to the edges of the sockets; mind that you do not injure the eyelids in this operation, nor crush the ball of the eye—which would totally spoil the plumage with its liquid matter.

When the skin is drawn quite down to the root of the bill, draw the eyes from their sockets, and clean the latter; remove the muscles and membranes of the scull, and all the flesh about the bill, and lay every bone bare; cut off the lower part of the head, that you may more easily extract the brain; if the bird be large, it is sufficient for this purpose to enlarge the occipital cavity; the whole inside of the scull may then be cleaned. Your work of stripping is thus completely finished.

Now apply your preservative to the interiour of the skin, within the scull, the sockets of the eyes, the bill—in fact in every place where you deem it necessary; but avoid the eyelids, as by passing through the cavities of the eyes, it would stain the feathers. Stuff the scull, the orbits of the eyes, and the bill; this done, immediately turn the skin of the neck—which has hitherto been inside out—back again.

All these operations must be done with despatch; the skin of the head is very slender, and dries quick; once dry, it will be very difficult to turn. Until you have acquired dexterity in the practice, you would do well to keep the skin moist, by sprinkling it from time to time with the steeping liquids, or even with water.

The skin of the neck is very pliant; take care not to stretch it much in skinning, turning, or stuffing; when it is extended beyond its proper length, it becomes flabby, and the feathers so disarranged that it is impossible to smooth them.

As soon as the whole skin is restored to its proper shape, set the plumage in order—for if you postpone this till the skin be dry, you will find it impossible. For this purpose, hold it by the bill, shake it gently, blow in the direction of the feathers; pinch down with the nippers any contrary feathers here and there; with the same implement open the eyelids, put them into shape by arranging the stuffing in the sockets. Introduce the preservative at the bill; and if wanted, stuff in cotton to replace any deficient member, as the tongue, larynx, &c.

You come now to the stuffing of the body. Beginning with the neck, lay the bird upon the back, as directed at the first of the operation; pass into the neck the stuffing-matter with a pair of slender pincers; the scull, you will recollect, remains attached to the skin, but denuded of all its flesh; introduce the stuffing carefully between the skin and the scull, to bring the head to its proper shape; this done, fill up the neck, by adding wads of stuffing larger and larger as the neck increases in diameter.

We now come to a process the more indispensable, inasmuch as it determines the possibility of giving the wings a good position in mounting. The bone which joins the wing to the body, is named the *humerus;* the two next, which articulate with this and run close together the whole of their length, are the *radius* and the *cubitus;* take each wing by the humerus, and draw them together over the back; then, with a needle or awl, pass a wire between the radius and cubitus of each, and twist the ends of the wire together—so as to bring the wings a line or two apart in the smallest birds, three lines in those of the size of a lark, and progressively for the rest; it is necessary to be explicit here, for the point is essential;—the above distances are to be reckoned between the upper edges of the wings when elevated, and from the joint made by the articulation of the humerus with the radius and cubitus of one wing, to the same joint of the other wing.

This done, apply a new coat of preservative to all the bones of the wings which you can get at; then wedge in between the joints of the humerus just mentioned, a wad for the purpose of keeping them apart. Apply the preservative to every part of the skin, but take care to let none of it touch the feathers; the stain would be difficult to efface.

The remainder of the stuffing-process will not require any detail; no cavity or fold of the skin should remain empty; bring it out to its natural size; it should not be stuffed harder than to offer about the same degree of resistance as a sponge, when pressed. Your bird is now stuffed; if he is to be sent away before mounting, close the edges of the skin, and pin them together if necessary—which however is not generally the case; he should be kept free from dampness.

It is difficult to preserve an ostrich, by making use of arsenical soap only. The feathers being very long and thick, you must soak them with spirit of turpentine at their roots, and place little bags of camphire at intervals.

Materials for Stuffing. As upon the proper choice of these materials must depend the preservation of your subjects, we shall go into some detail here. The best materials are :—

1. *Cotton,* for small birds, and those of any size where you can afford the proper quantity. When it is of a long staple, and your subject be very small, chop it up with scissors.

2. *Flax* and *Hemp,* combed more or less fine, according as you want it. This should be employed for birds of the size of a pigeon and larger; for smaller ones it may be chopped.

3. *Moss.* Before using it, pick it clean, and bake it in an oven to kill the vermin which may infest it; use it for birds as big as a hen or larger.

4. *Salt-grass.* An excellent material, as it seldom contains insects; apply it the same as moss; wash it first in fresh water, as the salt with which it is imbued would attract humidity.

5. *Common grass,* baked in the oven, may be used to stuff large animals—such as the dog, wolf, bear, or the pelican, swan, ostrich, &c.

6. *Straw* is seldom used, except for very large animals—like the deer, horse, bison, or rhinoceros. It is not commonly baked, though this precaution may have its use.

When none of the above are at hand, and you are driven to substitutes, be careful to select them from the vegetable kingdom. Never make use of *wool, hair,* or any animal substance; they all attract insects.

A subject need not be restricted to a single material; different parts may be stuffed with different matter, according to the size of the cavity to be filled.

If your subject be very valuable, and you have sufficient time, you may have an additional means of preservation, by soaking the stuffing for twenty-four hours in a strong solution of alum; take care to dry it completely before use.

INDIAN POPULATION WEST OF THE MISSISSIPPI.

It appears from a communication of Quartermaster General Cross, made to the War Department, and recently published, that the number of Indians now

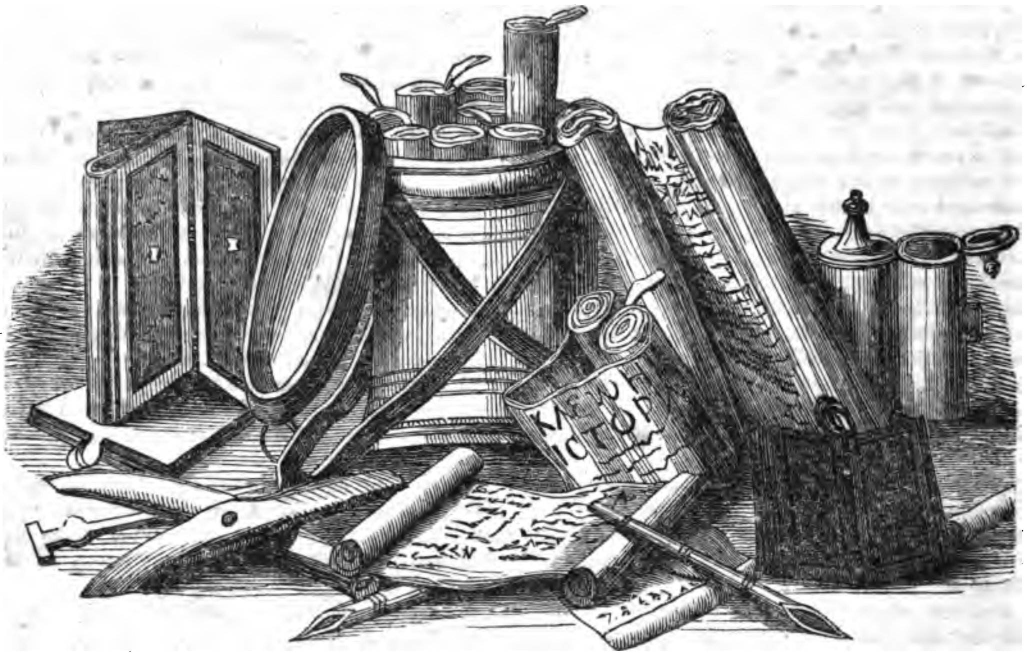
east of the Mississippi, is	49,365
Numberof Indians who have emigrated from east to west side,	51,327
Number of indigenous tribes,	231,806
Aggregate,	332,498

It is estimated by Mr. Harris, the Indian Commissioner, that these Indians can bring into the field rising sixty-six thousand warriours; that is, when emigration is completed, and they choose to coalesce.

To resist such a coalition, General Cross thinks a force of 7,000 men would be necessary on the western frontier, distributed thus :—

Fort Snelling,	300 men
Fort Crawford,	300 do.
Upper forks of the Des Moines,	400 do.
Fort Leavenworth,	1200 do.
Fort Gibson,	1500 do.
Fort Towson,	800 do.
The 8 posts of refuge proposed,	800 do.
The protection of the 4 depots,	200 do.
Jef. Barracks as a corps of reserve,	1500 do.
Total,	7,000 men.

ANCIENT WRITING MATERIALS.



[Writing Materials and Implements.—From Paintings at Herculaneum.]

I. Vegetable Substances.—1. *Wood. Inscriptions* on wood are very ancient, but do not require to be here noticed. Tablets of wood were very early in use, and seem to have been generally employed much in the same way as slates among ourselves: that is, for temporary writing. Sometimes they were single, but frequently from two to five or more leaves done up into a sort of book, something like our slate-books. The Greeks and Romans usually coated the boards with wax, on which the letters were traced with a *style*, or pen, commonly of iron, but also of gold, silver, brass, and sometimes ivory or bone. These instruments had one end pointed, to trace the letters, and the other broad and smooth, for the purpose of obliterating what had been written, by spreading back the wax, so as to render it fit to receive other words. In such books, there was in the middle of each leaf a sort of button, to prevent the pages from touching each other when closed. But the greater warmth of their climate prevented the Jews from generally using wax; they, therefore, wrote on the tables with a kind of ink, which could be easily sponged out when necessary. Such tablets of wood were in use long before the time of Homer, and Horne thinks it highly probable that several of the prophets were upon tablets of wood, or some similar material. They were not wholly disused in Europe until the fourteenth century; and are still employed in North Africa, Western Asia and Greece. The leaves of these tablet-books, whether of wood, metal, or ivory, were connected together by rings at the back, through which a rod was passed, that served as a handle to carry them by.

2. *Bark of Trees.*—The fine inner bark of such trees as the lime, ash, maple, or elm, was early used as a substance for writing. As such was called in Latin *liber*, this name came permanently to be applied to all kinds of books, and has, in a similar connexion, been adopted into most European languages. These books, like all other *flexible* materials, were rolled up to render them portable, and to preserve the writing. They were usually rolled round a stick or cylinder; and if they were long, round two cylinders. Hence the name *volume* (volumen)—a thing rolled up—which continues to be applied to books very different from rolls. In using the roll, the reader unrolled it to the place he wanted, and rolled it up again when he had read it.

3. *Leaves of Trees.*—Pliny thinks that the most early substance for writing was the leaf of the palm-tree; meaning, we presume, the first flexible substance. Be this as it may, the process is certainly of very remote antiquity; and would be naturally suggested by its being perceived how readily particular leaves received and retained marks made by a pointed instrument. At this day, books made with the leaves of different trees are common among the Indian nations, and specimens of them are numerous in England. The palmyra leaf is that which is most generally used, but others are preferred in some parts, as those of the *talipot*-tree, in Ceylon, on account of its superiour breadth and thickness. The letters are written, or rather engraved, with a fine-pointed style, or sort of bodkin; and the writing is afterward rubbed over with a composition of oil and pulverized charcoal, which renders the characters distinct and permanent.

4. *Papyrus.*—This was a vegetable tissue, the manufacture of which originated and was, in a great degree, peculiar to Egypt. It is obtained from a bulrush (*Cyperus papyrus*, Linn.) which grew in the

[Youth with a closed Roll.]

[Girl with a Tablet-book.]

swamps of the Nile to the height of ten or fifteen feet. The parts used in making the papyrus were the thin concentrick coats of pellicles that surround the triangular stalk; those nearest the centre being the best and finest. A layer of these was laid out lengthwise on a board, and another layer pasted over it crosswise, and after being pressed and dried in the sun, the sheet was completed by the surface being polished with a shell, or other hard and smooth substance. A number of these sheets were glued together, to form a roll of the required dimensions. The breadth was determined by the length of the slips taken from the plant; but the length might of course be carried to almost any extent. The largest that has yet been found is thirty feet long. The writing, *as in all rolls of whatever material*, is not across the length or breadth of the roll, but in columns, extended in the direction of the roll's breadth with a blank strip between them. Many such rolls have been found in Egypt, in mummy-cases and earthen vessels, and many also in the houses excavated at Herculaneum. The former, though more ancient, are better preserved and more easily unrolled than the latter, which have suffered from the action of heat. The superiority of the papyrus to all other materials previously known, brought it speedily into general use, for books, among the western civilized nations; indeed it may probably enough have been known to the prophets; for although the common account makes the discovery posterior to

[Female reading, with a Box of Rolls.]

the foundation of Alexandria, this must be an errour: since it was extensively used and formed an article of export from Egypt in the time of Herodotus, whose visit to that country was more than a century prior to the foundation of Alexandria. The rush itself is distinctly mentioned by Isaiah (xix. 7) in predicting the confusion of Egypt. Our wood-cuts exhibit an Egyptian roll, and others at Herculaneum, in various illustrative circumstances—some unrolled, two in the act of being read; some closed; and others in the boxes in which they were usually kept, several together, deposited vertically and ticketed at the upper extremity with their titles. (See more largely in "Egyptian Antiquities," vol. ii. chap. 7; and "Pompeii," vol. ii. chap. 13, in "Library of Entertaining Knowledge.")

[Female reading a Roll.]

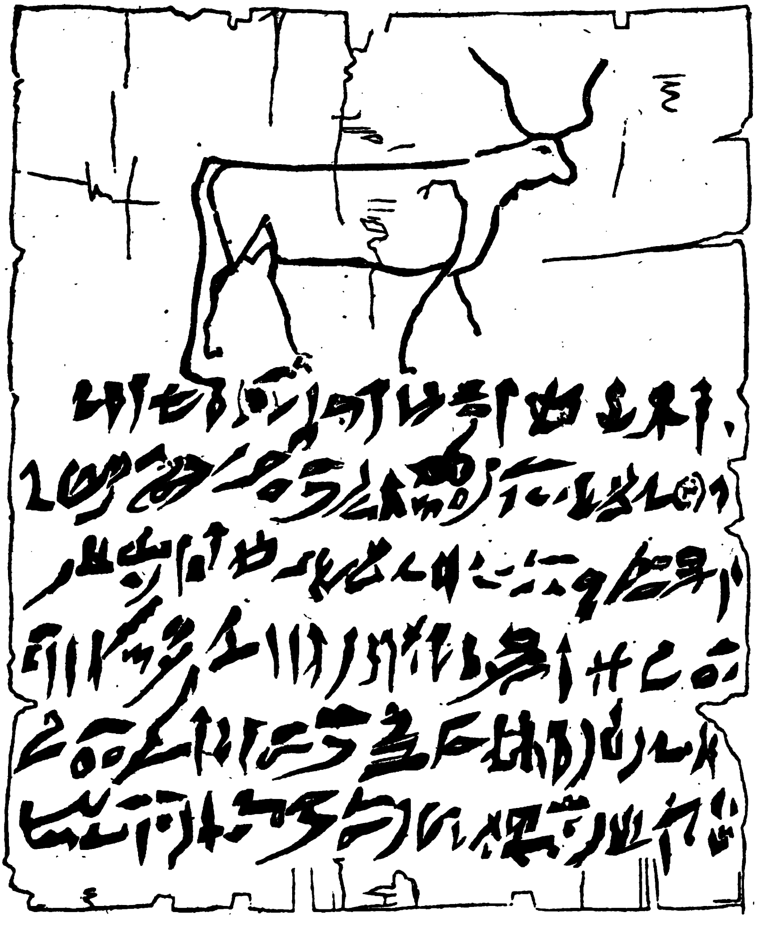
5. *Linen.*—The use of linen as a substance for writing on, is allowed to have been long prior to the invention of papyrus. Indeed, it is evident that when men had invented linen cloth for dress, and afterward began to feel the need of a flexible and durable material for writing, it would naturally occur to them, that, if their linen could be so prepared as to receive and retain the characters, it would be more convenient to form a portable book, than any substance previously known. They soon found how to adapt their tissues to this purpose by priming or painting them all over, before they began to write, the writing itself being also rather painted than written, for the inks of antiquity were rather paints than inks, containing no mordant to give them durability: resembling, in this, the inks now used in the East. That such writing was known to the ancient Egyptians, we know from the written bandages which are sometimes found on mummies. Linen books are mentioned by Pliny and Vopiscus; and Livy speaks of such books that were found in the temple of Moneta. The obvious characters of the resource, is also indicated by the fact, that the pictorial epistles of the Mexicans were painted on a cotton tissue. The use of linen was certainly known to the Jews in the time of Moses, the priestly robes being principally of that material; and there are Biblical scholars who think that the original of the Pentateuch and the other books of the Old Testament were written on rolls of linen. The question is certainly open to investigation, as *rolls* only are mentioned in a general sense, without our being informed of what they were composed.

II. Metallick Substances.—Tablets, and sometimes several tablets formed into a book, like the wooden tablets, consisting of plates of lead, copper, brass, and other metals, were anciently used, either to form leaves on which the wax might be spread, or else for the writings to be engraven upon them The latter process is exceedingly ancient. Writing on lead is mentioned by Job (xix. 24). Pliny mentions that leaden sheets or plates were used for important publick documents. This we learn also from other sources; and brass was also employed for inscriptions intended to be very durable. What Pliny says on the general subject is instructive. "At first men wrote on the leaves of the palm, and the bark of certain other trees; but afterward publick documents were preserved on leaden plates or sheets, and those of a private nature on wax and linen." The order of sequence here is of no weight; we cite it for the facts. Montfaucon purchased at Rome, in 1699, an ancient book entirely composed of lead. It was about four inches long and three inches wide: and not only were the two pieces that formed the cover, and the leaves, six in number, of lead, but also the stick inserted through the rings to hold the leaves together, as well as the hinges and nails. It contained Egyptian Gnostick figures and unintelligible writing. Brass, as more durable, was used for the inscriptions designed to last the longest, such as treaties, laws, and alliances. These publick documents were, however, usually written on large tablets. The style, for writing on brass and other hard substances, was sometimes tipped with diamond.

III. Animal Substances.—1. *Skins.* The skins of animals were in use for writing long before parchment was invented. Herodotus mentions the barbarians as writing or painting on the skins of goats and sheep; and Diodorus describes the ancient Persian records as being kept on the same substance. The recourse was so very obvious that it has prevailed in most countries. Even in America, the Mexicans had books of skins, and the North American Indians had maps painted on skins. It was also certainly one of the most ancient, if not the most ancient form of portable writing; and they have great probability on their side who contend that the books of Moses were written on the skins of sheep or goats. The Jews, then, had most certainly the art of preparing and dying skins, for rams' skins died red made a part of the covering for the tabernacle. In connection with this fact, the following particulars of a Hebrew MS. roll of the Pentateuch, now in the publick library at Cambridge, are very instructive. The roll was discovered by Dr. Claudius Buchanan, in the record-chest of the black Jews in Malabar, supposed to be descended from the first dispersion of the Hebrew nation by Nebuchadnezzar. The date of the manuscript could not be ascertained, but the text is supposed to have been derived from those copies which their ancestors brought with them to India. It is written on a roll of goat-skins, *died red*, and measures forty-eight feet in length, twenty-two inches in breadth. As it wants Leviticus and the greater part of Deuteronomy, it is calculated that its original length must have been not less than ninety English feet. In its present condition it consists of thirty-seven skins, comprehending one hundred and seventy columns, four inches in breadth, and containing each from forty to fifty lines. It is in some places worn out, and the holes have been sewn up with pieces of parchment. See farther particulars in Horne's account of Hebrew Manuscripts in his "Introduction," vol. iv., pp. 86–89. We refer to this remarkable roll merely as representing a very primitive manner of writing important documents, without expressing any opinion as to the date of the roll, or the value of its text. Dr. Buchanan himself states, in his "Researches," that "the Cabul Jews, who travel into the interiour of China, say, that in some synagogues the law is still written on a roll of leather, made of goatskins, died red; not on vellum, but on a soft flexible leather."

2. *Parchment.*—This is but an improvement, although a very important one, on the process just mentioned. It was one of the latest, if not the latest of the various processes we have noticed, although some assign it a very early date, for want of adverting to the difference between it and *skins* less artificially prepared. The improvement is said to have been invented at Pergamos, at a time when Ptolemy Philadelphus prohibited the exportation of papyrus from Egypt, with the view of obstructing the formation of a great library which Eumenes, king of Pergamos, was forming, and which he feared might eclipse his own great library at Alexandria. It is certain that the best parchment was made at Pergamos, and skins thus prepared were hence called *Charta Pergamena*, of which our parchment is a corruption. In Greek they are sometimes called *membrana*. Parchment came to be employed for legal, sacred, and other particular classes of works; but the comparative cheapness of papyrus, combined with as much durability as could be required for the more common literary works, maintained it still in general use. The Jews soon began to write their scriptures on parchment, of which the rolls of the law used in their synagogues, are still composed.

3. *Ivory.*—Tablets and tablet-books of ivory, on the same principle as those of wood and metals, were anciently in use, much as they continue to be so among ourselves. They were written on with that paint-like ink which, as we have already noticed, might be washed off when necessary. The Burmese have beautiful books formed of ivory sheets, stained black, on which the characters are gilt or enamelled, and the margins adorned with gilding.



[Fragment of an Egyptian Papyrus Roll.]

AMERICAN ANTIQUITIES.

(Continued from page 380.)

DISCOVERIES OF MORE SOUTHERN REGIONS.

The party sent by Thorwald Ericson in the year 1003, from Leifsbooths, to explore the southern coasts, employed from four to five months in the expedition; they therefore most likely examined the coasts of Connecticut and New York—probably also those of New Jersey, Delaware, aud Maryland. The description of this range of coast is accurate.

ARE MARSON'S SOJOURN IN GREAT IRELAND.

In those times the Esquimaux inhabited more southerly regions than they do at present. This is both evident from the ancient accounts, and seems besides to gain corroboration from ancient skeletons which have been dug up in regions even more southerly than those in question; a circumstance which, however, merits a more accurate examination. In the neighbourhood of Vineland, opposite the country inhabited by the Esquimaux, there dwelled, according to their reports, people who wore white dresses, and had poles borne before them, on which were fastened lappets, and who shouted with a loud voice. This country was supposed to be HVITRA-MANN-A-LAND, as it was called (*the Land of the White Men,*) otherwise called IR-LAND IT MIKLA, (*Great Ireland,*) being probably that part of the coast of North America which extends southward from Chesapeake bay, including North and South Carolina, Georgia, and Florida. Among the Shawanese Indians, who some years ago emigrated from Florida, and are now settled in Ohio, there is preserved a tradition which seems of importance here; viz. that Florida was once inhabited by white people, who were in possession of iron implements. Judging from the ancient accounts, this must have been an Irish Christian people, who, previous to the year 1000, were settled in this region. The powerful chieftain, Are Marson, of Reykianes, in Iceland, was, in the year 903, driven thither by storms, and there received baptism. The first author of this account was his contemporary, Rafa, surnamed the Limerick-trader, he having long resided at Limerick, in Ireland. The illustrious Icelandick sage, Are Frode, the first compiler of the Landnama, who was himself a descendant in the fourth degree from Are Marson, states on this subject, that his uncle, Thorkell Gellerson (whose testimony he on another occasion declares to be worthy of all credit) had been informed by Icelanders, who had their information from Thorfinn Sigurdson, Earl of Orkney, that Are had been recognised in Hvitramannaland, and could not get away from thence, but was there held in high respect. This statement therefore shows, that in those times there was an occasional intercourse between the western European countries (the Orkneys and Ireland) and this part of America.

VOYAGES OF BIORN ASBRANDSON, AND GUDLEIF GUDLAUGSON.

It must have been in this same country that Biörn Asbrandson, surnamed Breid-vík-ínga-kappi, at the latter part of his life. He had been adopted into the celebrated band of Jomsburg warriours, under Palnatoke, and took part with them in the battle of Fyrisval, in Sweden. His illicit amatory connexion with Thurida of Frodo, in Iceland, a sister of the powerful Snorre Gode, drew upon him the enmity and persecution of the latter; in consequence of which, he found himself obliged to quit the country for ever, and, in the year 999, he set sail from Hraunhöfn, in Sniofelsnes, with a N. E. wind. Gudleif Gudlaugson, brother of Thorfinn, the ancestor of the celebrated historian, Snorre Sturluson, had made a trading voyage to Dublin; but when he left that place again, with the intention of sailing round Ireland, and returning to Iceland, he met with long continued northeasterly winds, which drove him far out of his course to the southwest, and late in the season he, along with his company, at last made land; the country was very extensive, but they knew not what country it was. On their landing, a crowd of the natives, amounting to several hundreds in number, came against them, overpowered, and bound them. They did not know any body in the crowd, but it seemed to them that their language resembled Irish. The natives now took counsel whether they should kill the strangers, or make slaves of them. While they were deliberating, a large company approached, diplaying a banner, close to which rode a man of distinguished appearance, who was far advanced in years, and had gray hair. The matter under deliberation was referred to his decision. He was the aforesaid Biörn Asbrandson. He caused Gudleif to be brought before him, and, addressing him in the Norse language, he asked him whence he came. As he replied that he was an Icelander, Biörn made many inquiries about his acquaintance in Iceland, particularly about his beloved Thurida, of Frodo, and about her son Kiartan, supposed to be his own son, and who at that time was the proprietor of the estate of Frodo. In the meantime, the natives becoming impatient, and demanding a decision, Biörn selected twelve of his company as counsellers; he took them aside, and some time after, he went towards Gudleif and his companions, and told them that the natives had left the matter to his decision. He thereupon gave them their liberty, and advised them, although the summer was already far advanced, to depart immediately, because the natives were not to be depended on, and were difficult to deal with; and, moreover, conceived that an infringement on their laws had been committed to their disadvantage. He gave them a gold ring for Thurida, and a sword for Kiartan, and told them to charge his friends and relations not to come over to him, as he was now become old, and might daily expect that old age would get the better of him; that the country was large, having but few harbours, and that strangers must everywhere expect a hostile reception. They accordingly set sail again, and found their way back to Dublin, where they spent the winter; but next summer they repaired to Iceland and delivered the presents; and all were convinced that it was really Biörn Asbrandson whom they had met with in that country.

BISHOP ERIC'S VOYAGE TO VINELAND.

It may be considered as certain that the intercourse between Vineland and Greenland was maintained for a considerable period after this, although the scanty notices about Greenland contained in the ancient manuscripts do not furnish us with any satisfactory information on this head. It is however recorded, that the Greenland bishop, ERIC, impelled probably by a Christian zeal either of converting the colonists, or of animating them to perseverance in the faith, went over to Vineland in the year 1121. As we have no information of the result of his voyage, but can merely gather from the above expression that he reached his destination, we must presume that he fixed his permanent residence in Vineland. His voyage, however, goes to corroborate the supposition of a lengthened intercourse having been kept up between the countries.

DISCOVERIES IN THE ARCTICK REGIONS OF AMERICA.

The next event in chronological order, of which accounts have been preserved in ancient records, is a voyage of discovery in the Arctick regions of America performed during the year 1266, under the auspices of some clergymen of the bishoprick of Garðar, in Greenland. The account of it is taken from a letter, addressed by a clergyman of the name of Halldor, to another clergyman, named Arnold, formerly established in Greenland, but who had then become chaplain to the Norwegian king, Magnus Lagabæter. At that time all men of any consequence in Greenland possessed large vessels, built for the purpose of being despatched northward, in hunting and fishing expeditions. The northern regions which they visited were called Norðr-set-ur; the chief stations were Greipar and Krðks-fiarð-ar-heiði. The first of these stations is supposed to have been situate immediately southward of Disco; but that the ancient Northmen went much farther north on this coast may be inferred from a very remarkable runick stone, found in the year 1824, on the island of Kin-gik-tór-soak, lying in the latitude 72° 55′ N. The latter-mentioned station was to the north of the former. The object of the voyage is stated to have been, to explore regions lying more to the northward than those they had hitherto been accustomed to visit, consequently lying farther north than KROKS-FIARD-AR-HEIDI, where they had their summer quarters (*setur*,) and which they were therefore regularly accustomed to visit. The following particulars are mentioned relating to this voyage of discovery. They sailed *out* of Kroks-fiarð-ar-heiði; and, after that, encountered southerly winds, accompanied by thick weather, which obliged them to let the ship go before the wind. On the weather clearing up, they saw many islands, and all kinds of prey, both seals and whales, and a great many bears. They penetrated into the innermost part of the gulf, and had icebergs (*glaciers*) lying also to the southward as far as the eye could reach. They observed some vestiges indicating that the Skrellings had in former times inhabited these regions, but they could not land on account of the bears. They then put about and sailed back during three days; and, now again, they found traces of the Skrellings having been on some islands lying to the southward of a mountain, by them called Sniofell. After this (on St. James's day) they proceeded southward, a great day's rowing. It froze during the night in those regions, but the sun was above the horizon both night and day; and when on the meridian, in the south, he was not higher than that when a man lay down across a six-oared boat, stretched out towards the gunwale, the shadow formed by the side of the boat nearest the sun reached his face; but at midnight the sun was as high as when it was (highest) in the northwest, in the Greenland colony. Afterward they sailed back again to their home at Garðar. Krðks-fiarð-ar-heiði, as we have observed above, had been for some time previous regularly visited by the Greenlanders. The name shows that the firth was surrounded by barren highlands (*heið-i*;) and the description of the voyage shows that it was a firth of considerable extent, in and through which there was room for several days' sail. It is stated, for instance, that they sailed *out of* this firth or sound into another sea, and into the innermost part of a gulf, and that their returning voyage occupied several days. As to the two observations mentioned as having been taken on St. James's day, the first of them leads to no certain result, as we have no sure means of ascertaining the depth of the boat, or rather the relative depth of the man's position, as he lay across the boat, in reference to the height of the side of the same, so as to enable us to deduce the angle formed by the upper edge of the boat's side and the man's face, which is the angle measuring the sun's altitude at noon on St. James's day, or the 25th of July. If we assume, as we may do with probability, that it was somewhat less than 33°, and yet very near that measure, the place must have been situate near north latitude 75°. There seems no probability that it was a larger angle, and consequently that the place lay more to the southward. The result obtained from the other observation is however more satisfactory. In the thirteenth century, on the 25th of July,

the sun's declination was + 17° 54′.
Inclination of the Ecliptick 23° 32′.

If we now assume that the colony, and particularly the episcopal seat of Garðar, was situate on the north side of Igaliko Firth, where the ruins of a large church and of many other buildings indicate the site of a principal settlement of the ancient colony, consequently, in 60° 55′ north lat., then, at the summer solstice, the height of the sun there, when in the northwest, was=3° 40′, equivalent to the midnight altitude of the sun on St. James's day in the parallel of 75° 46′, which fails a little to the north of Barrow's Strait, being in the latitude of Wellington's Channel, or close to the northward of the same. The voyage of discovery undertaken by the Greenland clergymen was therefore carried to regions, which, in our days, have been more accurately explored, and their geographical position determined by Sir William Parry, Sir John Ross and Capt. James Clark Ross, and other British navigators, in the no less daring and dangerous expeditions conducted by them.

NEWFOUNDLAND RE-DISCOVERED FROM ICELAND.

The discovery next recorded was made by the Iceland clergymen ADALBRAND and THORWALD HELGASON, well known in the history of Iceland as having been involved in the disputes at that time prevailing between the Norwegian king, Eric Priesthater, and the clergy, and which in Iceland were chief ly headed by the governor, Rafa Oddson, and Arne Thorlakson, bishop of Skalholt. Accounts drawn up by contemporaries contain merely the brief notice, that in the year 1285 the abovementioned clergymen discovered a new land to the westward of Iceland, (*fundu nyja land.*) This land, to which by command of King Eric Priesthater a voyage was some years afterward projected by Landa-Rolf, is supposed to have been *Newfoundland.*

A VOYAGE TO MARKLAND IN THE YEAR 1347.

The last piece of information respecting America, which our ancient manuscripts have preserved, refers to a voyage in the year 1347, from Greenland to MARK-LAND, performed in a vessel having a crew of seventeen men, being probably undertaken for the purpose of bringing home building-timber and other supplies from that country. On the voyage homeward from Markland, the ship was driven out of her course by storms, and arrived with loss of anchors at Straumfiord, in the west of Iceland. From the accounts—scanty as they are, of this voyage, written by a contemporary nine years after the event, it would appear, that the intercourse between Greenland and America proper had been kept up to so late a date as the year abovementioned; for it is expressly said that the ship went to Markland, which is thus named as a country that in those days was still known and visited.

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After having perused the authentick documents themselves, which are now accessible to all, every one will acknowledge the truth of the historical fact, that during the tenth and eleventh centuries, the ancient Northmen discovered and visited a great extent of the eastern coasts of North America; and will besides be led to the conviction, that during the centuries immediately following, the intercourse never was entirely discontinued. The main fact is certain and indisputable. On the other hand, there are in these as in all other ancient writings, certain portions of the narrative which are obscure, and which subsequent disquisitions and new interpretations may serve to clear up. On this account it seems of importance that the original sources of information should be published in the ancient language, so that every one may have it in his power to consult them, and to form his own judgement as to the accuracy of the interpretations given.

With regard to such traces of the residence and settlement of the ancient Northmen as, it is presumed, are still to be met with in Massachusetts and Rhode Island (the countries which formed the destination of their earliest American expeditions,) we shall content ourselves for the present with referring to the hints, which are contained in the "ANTIQUITATES AMERICANÆ." This matter will continue to form a subject for the accurate investigation of the COMMITTEE of the Royal Society of Northern Antiquaries ON THE ANTE-COLUMBIAN HISTORY OF AMERICA; and the result of this investigation, together with such additional elucidations of the ancient manuscripts as we may have it in our power to furnish, shall be communicated in the ANNALS and MEMOIRS of the Society.

INDIGO.

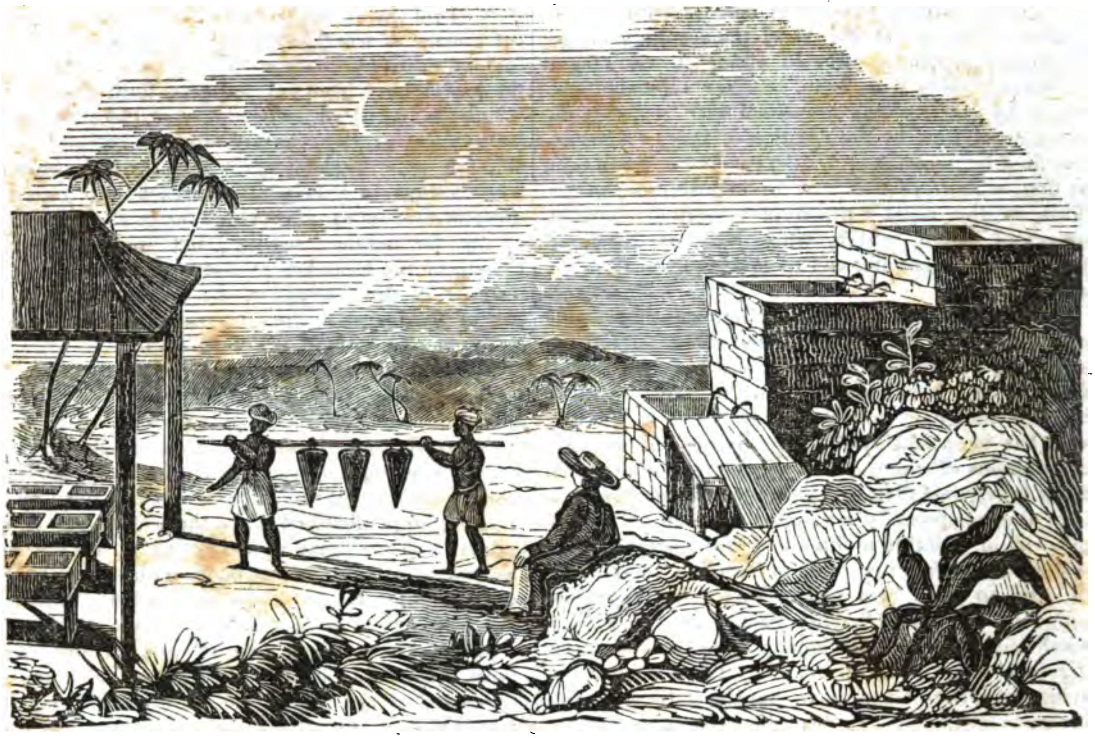
THE knowledge of this most valuable vegetable substance, which forms an important part of East and West Indian commerce, and is beginning to receive considerable attention as a domestick production, is alike interesting to the chymist and to the dier. The ancients were acquainted with it under the name *indicum.* Pliny knew that it was a preparation of a vegetable substance, though he was ignorant of the plant which furnished it, and of the process by which it was prepared. From its colour, and the country from which it was imported, some authors call it *atramentum indicum,* and *indicum nagrum.* The American name is *nil* or *anil,* from which the Portuguese have adopted their *anileira,* the other European nations generally call it *indigo.*

In treating of indigo, it will be the most convenient to explain, in the first place, its physical and chymical properties, and afterward to allude to the sources from which it is derived, and the method by which it is manufactured. As it is found in commerce, it presents the form of little square or oblong cakes, of an intense blue colour, approaching to black; is brittle and friable; rather light, and without taste or odour. When heated, it has a disagreeable odour, subliming at 55° Fahrenheit, a degree of heat near that at which it is decomposed. Its vapour is of a rich violet red-colour, and condenses by cold into delicate acicular crystals, which consist of pure indigo. Water, by being boiled on indigo, dissolves only about a ninth or a twelfth its weight; the solution is of a reddish-brown colour, and contains what may be called the *extractive* part or the substance; but the colouring matter remains unaltered, except in having assumed a brighter hue. Alcohol and ether, when digested upon it, are also attended with similar effects. Sulphurick acid is the only single agent that dissolves indigo without destroying its colour. When it is put into this acid, a yellow solution is at first formed, which, after a few hours, acquires a deep blue colour. From the solution, diluted with water, potash and its sulphate throw down a deep dark-blue precipitate, capable of imparting to water, containing only $\frac{1}{500000}$ of its weight, a distinctly blue tinge. It is no longer subject to vaporization, however; from which circumstance, and its property of solubility in water, it is inferred to be a different substance from indigo, and has received the name of *cerulin.* When properly diluted with water, it forms the *liquid blue,* or *Saxon blue,* of the diers.

Another compound of indigo and water, under the name of *phenecin,* is obtained when water is added to a solution of indigo in sulphurick acid, which has been suffered to stand for several hours, till it has lost its yellow colour, and become blue. It appears to consist of one equivalent of indigo and two of water. In the formation of these substances, indigo is conceived to combine with water; but whether the effect is produced by the sulphurick acid, or whether the sulphurick acid operates merely to prepare the indigo for combining with water afterward, is not yet fully determined. When indigo, suspended in water, is brought into contact with certain deoxidizing agents, it is deprived of a part of its oxygen, becomes green, and is rendered soluble in water, and still more so in the alkalies. It recovers its former colour, however, on exposure to the air, by again absorbing oxygen of one seventh or one eighth of the whole weight of the resulting indigo. Its deoxidizement is effected either by allowing it to ferment along with bran, or other vegetable matter, or by decomposing in contact with it the protosulphate of iron, by the addition of lime. Substances died by deoxidized indigo receive a green teint at first, which becomes blue by exposure to the air. This is the usual method of colouring cloth by means of indigo, which, when fully oxydized, affords a permanent die, not removable by soap or by acids.

Chlorine, whose power in extinguishing vegetable colours is universal, destroys the colour of indigo; and, from the known fact that a given quantity of free chlorine discolours always the same quantity of pure indigo, a solution of indigo in sulphurick acid has been employed for measuring the strength of solutions of chlorine and of chloride of lime, in order to regulate their application to the art of bleaching; and, reciprocally, a solution containing a known quantity of chloride of lime may be employed as a test of the strength or value of indigo. Indigo may be said to be a rare production of the vegetable kingdom, it hitherto having been found only in a small number of species belonging to the genera *indigofera*, *isatis*, and *nerium*; but it is almost exclusively from the first of these that the indigo of commerce is extracted. In describing the culture of the indigo-plant, and the mode of manufacturing the indigo, we shall draw our materials mainly from the methods pursued in the East Indies, where this article is prepared in its greatest perfection. The plant requires a rich, light soil, and a warm exposure. It succeeds best on newly-cleared lands, on account of their moisture; it requires protection against high winds, and needs irrigation in times of drought. The ground, after being properly prepared for the reception of the seed by ploughing, is sown pretty thickly, the time of sowing being so chosen that rain may fall upon the plant as soon as it shows itself above the ground, by which it is not only greatly invigorated, but cleansed from those innumerable insects which otherwise are liable to destroy it. From this time, comparatively little rain is needed; for the dews are so copious as to supply nearly all the moisture required; and, besides, its spindle-shaped root, which descends into the ground perpendicularly, to the depth of nearly three feet, enables it to endure temporary droughts. The prevalence of cloudy weather and much moisture, however, cause the indigo-plant to thrive more luxuriantly, but occasion a great deficiency in the colouring-matter, which, as it contains an extraordinary quantity of carbon, requires the plant to decompose carbonick acid gas very abundantly—an operation which it is unable to perform when deprived of the direct influence of the sun's rays. As the young shoots furnish larger and more numerous leaves, it is usual to plant every year; but the Egyptians, who seem to cultivate it most successfully, plant only every third or fourth year. As the plant approaches to maturity, the leaves undergo a sudden change in colour, from a light to a dark green. As soon as this change is observed, the branches are severed from the parent-stem early in the morning, and spread out in the sun till the afternoon, by which time the leaves become sufficiently dry to be beaten from them by a stick. The leaves, so separated, are housed in warehouses, closely packed and well trodden down by natives. The plants from which the leaves have been severed send forth a new crop, which is gathered, when mature, like the first. Rain, however, is necessary after the cutting, to enable the plant to shoot again in a thriving manner. The cuttings, in a favourable season, are repeated three or four times, after which the ground is ploughed up for another sowing; but each successive growth of the branches produces an increased deterioration of the qualities of the leaves, so that one part of the leaves of the first cutting yields as much indigo as two parts of the third crop.

The dried leaves are not immediately used, but are kept packed for one month, during which time they suffer a material change, which is indicated by their having passed to a light lead-colour. By additional keeping the lead-colour gradually darkens, until it becomes black. The maximum quantity of indigo is to be obtained when the lead-colour is effected; and any delay in extracting it, after it has reached this point, is attended with a loss in the quantity of the indigo. The lead-colour, however, does not appear in a month after the leaves are gathered, unless, from fear of rain, or any other cause, they were cut before being ripe; and, on the other hand, if the cutting was deferred till after the plant was fully ripe, the leaves will not require to be kept so long. The dried leaves, after having suffered the change of colour alluded to, are transferred to the steeping-vat (an uncovered reservoir, thirty feet square, and twenty-six inches deep, constructed of brick, and lined with stucco,) where they are mingled with water, in the proportion of about one volume of leaves to six of water, and allowed to remain two hours. The great affinity of indigo for oxygen is here very manifest, in the quick change of the colour of the leaves which float on the surface and are exposed to the action of the atmosphere, to a blackish-blue, when contrasted with those below, which remain unchanged. On this account the vat is frequently stirred, so that the floating leaves may be immersed. After two hours' infusion, the water, which, from the solution of imperfectly oxygenized indigo, has acquired a fine green colour, is allowed to run off from the leaves, through strainers, into the beating-vat, where it is agitated by the paddles of ten or twelve natives for about two hours, during which time the fine green liquor gradually darkens to a blackish-blue. This part of the process requires a longer or shorter time, depending on the former preparation of the leaf, and the immediate influence of the sun. The criterion for judging when it is completed, is derived from the incipient separation of the particles of indigo, which become visible by pouring a small quantity of the fluid into a white earthen dish. At this time, lime-water is thrown into the vat, and thoroughly agitated with the whole mass of fluid. The mass is then left to subside for the space of three hours, when the supernatent liquid, which is of a fine bright Madeira-colour, is withdrawn, by orifices in the vat at different heights. The indigo is then removed to the covered part of the manufactory, where it is put on a straining-cloth, and allowed to drain throughout the night. On the following morning, it is transfer-



[Manufacturing Indigo.]

red to a copper boiler, where it is mingled with a quantity of water, and raised to ebullition. As the mass is gradually heating, a quantity of scum rises, which is immediately removed, and, as soon as the whole is brought to the boiling point, the fire is withdrawn. The contents of the copper are retaken to the strainers, and the drained indigo is then divided into small portions, each portion being well worked by the hands of the natives, in order to free it from air-bubbles. It is then carried to the pressing-boxes, which are usually square, and of sufficient depth to leave the cake about two inches and a quarter in thickness. By means of a powerful screw, the water is separated from the indigo; the cakes are gradually dried in the shade, and thus rendered fit for exportation.

In the West Indies and America, the old process, formerly employed in India, of fermenting the leaves as soon as cut, instead of drying them, and obtaining the indigo by simple infusion, is still in use. The plant is allowed to stand until it is fully in blossom, when it is cut down with reapinghooks, tied in loads, and carried to the works, where it is deposited in strata in the steeping-vat. As soon as the vat is filled with the green plant, water is admitted sufficient to cover it, and the whole is left to digest and ferment, until the greatest part of the pulp is extracted, without letting the tender tops run to putrefaction; and it is the management of this point which occasions the planter the greatest difficulty; for, if he draws off the water but two hours too soon, he inevitably loses the greatest part of the pulp, and, if the fermentation runs but two hours too long, the whole is spoiled.

To ascertain the due degree of fermentation, the workman draws out, from time to time, a handful of the plant, and when he finds the tops grow very tender and pale, and observes the stronger leaves change their colour to a less lively teint, he draws the liquor off without delay. An experienced manufacturer will also form a tolerable estimate of the degree of fermentation by the grain of the infusion, of which he frequently beats a little in a silver cup. When the pulp is believed to be extracted, the infusion is drawn off into the beating-vat, after which it is treated in a manner similar to that above described.

A SUPERSTITION.

The practice of informing bees of any death that takes place in a family, is well known, and still prevails among the lower orders in England. The disastrous consequences to be apprehended from non-compliance with this strange custom, are that the bees will dwindle and die. The manner of communicating the intelligence to the little community, with due form and ceremony, is this—to take the key of the house, and knock with it three times against the hive, telling the inmates, at the same time, that their master or mistress, &c., (as the case may be,) is dead. Mr. Loudon says, "When in Bedfordshire lately, we were informed of an old man who sung a psalm last year in front of some hives which were not doing well, but which, he said, would thrive in consequence of that ceremony."

Dick on the Improvement of Society.

CAUSES OF POVERTY.

[From Sedgwick's Publick and Private Economy.]

In Europe, the common rule is, once a servant, always a servant; once a mechanick, always a mechanick, once a tenant, always a tenant; and is not this an infamous usurpation? Let a man be born in one station or another, let him be rich or poor, does he not desire the power of rising? has no God given him the power of self-elevation? does he not long to advance in the scale of existence? is it not best that he should advance, if he has the talent to change one business for another, to his advantage, shall he not be allowed to do it; is it not best for the whole that he should have this privilege? Is it not a beneficent arrangement in nature, that all should have the opportunity of moving forward? And, if so, is it not a heartless, cruel thing, to keep down a virtuous man, to stifle his ambition, to prostrate his mind, by depriving him of all hope of bettering his condition? Never did a more grovelling policy creep into the world than this of keeping labouring people "in their places," as it is called.

What is meant by a *manual* labourer; who are manual labourers in the United States? Strictly speaking, we have seen, that there is no *mere* manual labourer, for no intelligent creature works with his *hands* alone. But, there is *this* distinction: some labourers work more with their *hands* and less with their *minds* than others. A judge, a lawyer, a painter, a sculptor, a musician, *labours* most with his mind, though his business may require that he should use his hands and bodily powers constantly.

A man, therefore, who labours with his hands mainly, whose business requires, *comparatively*, but little mind or education, is said to be a manual labourer. The more ideas, the more mind a man has, the better for him: all agree to that; so also the more a man labours with his mind, which is mental labour, and the less with his hands, which is bodily labour, the higher he is in the scale of labourers: all must agree to that, whether they will or no. This is a real distinction in nature, and can no more be got rid of by laws, constitutions, and form of government, than the complexion of the face or colour of the eyes. This is a distinction founded upon individual character; it is the most valuable of all distinctions, for it leads men above all things, to the cultivation of their minds and impels the people of the United States to a desire of universal education. It is upon this ground, that there ever have been, and ever will be, high and low, rich and poor, masters and servants, officers and their men, masters of ships and their crews, farmers and their labourers, master mechanicks and journeymen, manufacturers and their workmen. These are a part of the higher and lower classes in every country.

What then is the true principle upon this subject of grades and classes, as to who shall be high and who shall be low? It is that every man should have perfect freedom, unrestrained by monopoly or any unjust privilege, to exert his talents and raise himself to any height that he can. But this is not wholly the case, even in this favoured country, as will be shown hereafter.

Let us pursue the subject of labour, and take care that our minds are not filled with ideas that belong to other countries; labour has no where in the world the same ideas attached to it, that it has in the United States. For the want of understanding the subject, there is a good deal of uneasiness, and there are some serious evils. These errours and evils, though slowly, perhaps, will certainly be corrected.

Let us, then, go back to the case of the farmer. In a former chapter, there is a brief mention of what farmers are in most other countries. They are but a kind of upper servants on the land; they are tenants, and as they hold at the will of their landlords, they must till their farms as they direct. It is, therefore, the head of the landlord, and the hands of the tenant, that cultivate the earth in those countries. In such countries, it is very natural that such a farmer should be called a mere manual labourer; his degradation follows from having no certain possessions, and from being directed by another mind instead of his own. To transfer this idea of manual labour to our country, is a very unhappy perversion of the truth.

Let us now see more particularly what a farmer is in the United States. There are very few in the United States who are usually called gentlemen-farmers, which means here a man who is not obliged to work on his farm. The common farmer of the country is a manual labourer in the sense, that he is a *working*-man, with his hands, with all his bodily powers; he works with his hired men, late and early he does all the kinds of work that hired men do; there is nothing in the way of work on his farm, that some people look upon as dirty and disagreeable, that he is not commonly engaged in; he often does his own chores: work that naturally belongs to children. This is one half of the farmer, if you please, that is the *manual labourer*; and now let us look at the *mental labourer*. He is the lord of his own soil, "the monarch of all he surveys" within his own bounds. Everything on his farm, therefore, is subject to his will; he makes his farm, a grain farm, a sheep farm, a dairy farm, at his pleasure; he, therefore, must count the cost; he must educate himself to be an economical farmer, or he is very certain to be a broken-down farmer. These duties throw upon him the same kind of responsibility that belongs to the greatest man in the country, that of maintaining his rank. It is no shame to any man not to be able to rank as high as a farmer: but it is a deep disgrace to a farmer unnecessarily to lose his rank, to surrender his paternal acres to a speculator, or bank, or insurance office, at half price, and then be driven into the wilderness, because he does not understand farming, and will not economize and live within his earnings.

This is the *social* condition of the farmer, and now what is his *political* condition, for this has much to do with his character as a labourer?

In most of the free States, something approaching very nearly to universal suffrage is adopted; almost every citizen of age votes upon every subject that comes before the people in the towns. These towns are strictly perfect democracies; in their town-meetings the people act in their original democratick character, and not by their representatives; it is here, that the great power and influence of the farmer first appears. To be satisfied of this, it is only necessary to be familiar with these assemblies; the silence, order, decency, and despatch, with which many of them are conducted, ought to put to shame some that claim to be much higher. In these assemblies, in many of the States, the farmers are clothed with more power (as far as belongs to the towns to confer) than any other class, and probably more than all others. Here the farmer is chosen selectman, supervisor, road-master, surveyor of highways, poor-master, school committee-man, assessor and collector of taxes, &c., and a member of the state legislature in those states, in which there is a town representation. In some of the state legislatures, in the northern and western states, the farmers are a much more numerous class than all others. Here then is the foundation of the influence which the farmer exercises over political affairs, and no one should be ignorant how extensive this is! Long may it be exercised in its full vigour!

It is the greater or less amount of mind, of ideas, of education, of virtue, that belongs to a trade, art, or business, that constitutes the true foundation of rank, and this is not a rank or degree which a man can alter by quackery, or by any means, but by his own improvement, nor is it desirable that he should.

Those who pursue the elegant arts, are called artists, such as, sculptors, painters, musicians, &c., they, also, as well as the farmer, work with their hands, but their *labour* is mainly mental. Theirs are some of the best productions of superfluous wealth, after we are supplied with the necessaries and comforts of life; and should take the place of those petty bawbles and trinkets, and outside finery, by which so many people think to equalize all things, but they cannot. Many of these artists earn great wages; and it is because their productions are those beautiful creations that are gazed at, and sought for, not by the rich and luxurious alone, but by all mankind. Congress has resolved to pay our young countryman Greenough, $25,000 for a statue of Washington, as has already been stated. In equalling the anticipations of his countrymen, may it become an imperishable monument of genius and gratitude!

It will be said that these are high wages, but we must remember, *that one of the great laws of wages is*, that they are regulated by the circumstance of the number who can execute the thing to be done. Besides, if it cost a great price, it is expected that it will have a great value, and not be sent to auction after two or three years, as some people now dispose of their fine furniture. These artists, then, are not only labourers, *but producers of wealth*, of what is ennobling to man, whether he works most with his hands or his mind, call him what you will, a manual labourer or not.

What then is the great and peculiar distinction that the people of the United States have established by their institutions? What is that here, which is to be found in none of the great nations of the earth; what is that beneficent principle which here is going on to produce all that equality, that fair partition of the bounties of life of which nature admits? It is that the whole people are compelled to labour, and though a few individuals may become rich by lucky speculation, fortunate trade, or inheritance, there is no class that is not compelled to work. There is no king, nobility, or gentry, or favoured class by any other name, that are supported at the publick expense. These favoured classes in other countries make up the governing class, the idle class, the spending class. It is shocking to think of the havock they make of the wealth of the people, living as they do upon dainties, which cost ten or perhaps a hundred times more of the labour of the people, than the most healthful provisions. Still among all mankind goodness is to be found, and in the aristocratick or despotick countries, there are individuals in the governing class who labour as worthily and industriously as any others; all diligent, faithful publick officers in every country truly belong to the industrious class; they are a part of the working bees: they contribute honourably to the great stock of wealth, of good things. Good government is one of these.

The idle class will be in proportion to the riches of the people, and to the numbers of idlers that the people agree to support at the public expense. In England there is a debt of eight hundred million pounds sterling; this, in one way and another supports a great many idlers. In England there are idlers who pay from two to four thousand pounds sterling for a pack of hounds, a thousand guineas for twenty couple of hounds, and, on an average, two hundred guineas for hunting horses. All idlers are, of course, supported at the expense of the industrious.

But why should there be any idle class, or why should any class be exempted from contributing its share to the publick wealth; why should not every class be compelled to work.

The answer, in England and in those countries where the idle classes exist, is—

"That if all are obliged to work, all will be compelled to work for the necessaries of life, all will be brought down to manual labour, to servile labour, as it is called; none will have leisure to improve their minds, to study, to read, to cultivate the arts, to instruct the ignorant, to become philosophers; to contrive canals, rail-roads, and other improvements; to write good books, to make fine gardens, pictures, statues," &c., &c.

On the contrary, what is the fact? Are not the working people, are not those who have no incomes provided for them, but who are obliged to labour for their daily bread, the people who do most to cultivate their own minds and those of their fellow-men; do not those who have the stimulus of necessity to urge them on, make up that class who study most, read most; are they not the philosophers and inventors; are they not the artists, the architects, sculptors, painters, poets, &c.? There can be but one answer to these questions in any country in the world.

There are some people in this country who think that the farmers, mechanicks, manufacturers and others, whom they call labourers, are only producers of wealth. But as this is a lamentable errour, that creates heart-burnings in different classes, it must be wholly rooted out of the country.

Is not the judge, lawyer, sheriff, constable, who administers the law that protects all working-men from thieves, robbers, and murderers, himself a working-man? Is not the surgeon, who sets the broken bones of a working-man, one, also? Is not a physician, who restores a working-man to health and enables him to go to his work again, the cause of wealth?

There ariseth here, then, another question: who furnish the funds, who earn the money, that supports these working people that are neither farmers, mechanicks, merchants, nor manufacturers? The answer is plain: they, the working people, furnish the funds; they earn the money; some of them are the publick men, magistrates, lawyers, physicians, surgeons, &c., &c., that no great and prosperous country can live without; some are those who produce those thousands of beautiful things in the arts, that the merchants, farmers, mechanicks, and manufacturers cannot produce, but are willing to buy and to pay for, *out of that surplus which they create*. This explains the mystery, if any mystery there be, of the rise and progress of all the arts, which spring up as soon as the merchants, farmers, mechanicks, and manufacturers, are supplied with the common conveniences and necessaries of life; that is, after obtaining these, they are willing to work for something more.

Thus, we see, how, in the United States, the working-men are the patrons of the working-men, and that we do not require an idle class, a spending class, of dukes and earls, to hold the purse, first taking out what they choose, and then decreeing the prizes and honours to the labourer. Thus, we see, too, how the working-men in the United States, *combined* to pay Greenough twenty-five thousand dollars for a statue of Washington; and Irving, and Cooper, many thousand for those beautiful national works that have proceeded from their pens. An abridgment of Irving's History of Columbus, is a schoolbook in the common district schools in the state of New York.

The greatest lesson which the working-men can learn, is, how to *combine*, how to unite their hands and heads, their purses and their influence, in the good works which they should desire to bring about.

MEASUREMENT OF TIME.

[From La Place's Exposition du Système du Monde.]

The returns of the sun to the meridian and to the same equinox, or to the same solstice, form the days and the years. The astronomical day is the time comprised between two consecutive mid-days or midnights. The sidereal day is the duration of an entire revolution of the heavens. The astronomical day surpasses the sidereal day; for if the sun and a star pass the meridian at the same instant, the sun will return there later than the star the next day, and in the space of a year it will pass the meridian one time less than the star will pass the meridian. The astronomical days are not equal: their differences are produced by the inequality of the proper movement of the sun, and by the obliquity of the eclíptick; at the solstice of summer, the movement of the sun being slower than at the solstice of winter. The inequality of the proper movement of the sun is made to disappear by imagining a second sun moved uniformly on the ecliptick, and always traversing the great axis of the solar orbit, at the same instant as the true sun. The second sun, which we thus imagine, determines, by its return to the equator and to the tropicks, the mean equinoxes and solstices. The duration of its returns to the same equinox or to the same solstice, form the tropical year, of which the actual length is three hundred and sixty-five days and a quarter nearly. (365.242264.) Observation has taught us that the sun takes more time to return to the same stars. The sidereal year is the time comprised between two of these consecutive returns; it surpasses the tropical year by one seventieth of a day nearly, (0.014110.) Thus the equinoxes have a retrograde movement on the ecliptick, or a movement contrary to the proper movement of the sun. This movement is not exactly the same in all ages, which renders the length of the tropical year a little unequal; it is now about thirteen seconds shorter than in the time of Hipparchus. It is natural to make this year begin at the solstice of winter, which antiquity celebrated as the epoch of the regeneration of the sun, and which, under the pole, is the middle of the great night of the year. If the civil year were constantly three hundred and sixty-five days, its beginning would incessantly anticipate that of the true tropical year, and it would run through the different seasons in a period of about one thousand five hundred and eight years. This year was once in use in Egypt; but it deprives the calendar of the advantage of attaching the months and festivals to the same seasons, and of making them remarkable epochs for agriculture. The most simple method of correcting the civil year is that which Julius Cesar introduced into the Roman calendar, by making a bissextile or leap-year every fourth year; but a small number of ages would suffice to displace the beginning of these Julian years. In the eleventh century the Persians adopted a method remarkable for its exactness; they introduced a leap-year every fourth year, seven times consecutively, and deferred the bissextile, the eighth time, until the fifth year. It would take a great number of centuries sensibly to displace the beginning of this Persian year. The mode of intercalation by the Gregorian calendar is a little less exact, but if it be considered that this calendar is now that of almost all the nations of Europe and America, and that it has taken two ages and all the influence of religion to procure for it this universality, it will be felt that it is important to preserve so precious an advantage, even at the expense of a perfection which does not bear on essentials; for the principal object of a calendar is to offer a simple mode of attaching events to the series of days, and by an easy method of intercalation to fix the beginning of the year in the same season—conditions which are well fulfilled by the Gregorian calendar. The union of one hundred years, or century, forms the age, the longest period employed hitherto in the measure of time, for the interval which separates us from the most ancient known events does not yet demand a longer. The division of the year into twelve months is very ancient, and almost universal. The system of months of thirty days conducts naturally to their division into three decades; but at the end of the year the complementary days trouble the order of things attached to the days of the decade, which causes a necessity for embarrassing administrative measures. This inconvenience is obviated by the use of a little period independent of the months and of the years; such is the week, which since the most remote antiquity in which it loses its origin, circulates through the midst of ages, mixing itself in the successive calendars of different nations. It is perhaps the most ancient and the most incontestable monument of human knowledge; it appears to indicate a common source whence that knowledge has been spread forth; but the astronomical system which serves as its base proves the imperfection of human knowledge at that origin.

NOTE—The seven days in the Mosaick account of the creation being the first week of man's recorded existence, the Mosaick books being the most ancient known writings, and no traces of such a being as man occurring contemporary with remoter periods than the Mosaick account, all point to the cause of the week thus circulating through the most remote ages of antiquity.—TRANSLATOR.

THE CHILD IN SEARCH OF HER FATHER.

BY MRS. L. H. SIGOURNEY.

[From the Christian Register.]

THEY say I was but four years old,
When father went away,
Yet I have never seen his face,
Since that sad, parting day.
He went, where brighter flowrets grow,
Beneath Virginia skies,
Dear teacher, show me on your map
Where that far country lies.

I begg'd him, "Father, do not go!
For since my mother died
I love no one so well as you"—
And clinging to his side,
The tears came gushing down my cheeks
Until my eyes were dim;
Some were in sorrow for the dead,
And some in love for him.

He knelt and pray'd of God above,
"My little daughter spare,
And till we both shall meet again,
Oh, keep her in thy care."
He does not come!—I watch for him,
At evening twilight gray,
Till every shadow wears his shape,
Along the grassy way.

I muse and listen all alone,
When stormy winds are high,
And think I hear his tender tone,
And call, but no reply;
And so I've done these four long years,
Within a lonely home,
Yet every dream of hope is vain—
Why don't my father come?—

Father—dear father, are you sick
Upon a stranger's shore?—
Grandmother says it must be so—
O write to us once more.
And let your little daughter come,
To smooth your restless bed,
And hold the cordial to your lips,
And press your aching head.

Alas!—I fear he is dead—
Who will my trouble share?
Or tell me where his form is laid,
And let me travel there!
By mother's tomb I love to sit
Where the green branches wave,
Good people!—help an orphan child
To find her father's grave.

THE RED SEA.

THE Red sea, or Arabian gulf is an extensive gulf of the Indian ocean, dividing Arabia from the opposite coast of Africa, extending in a northwest direction from the Straits of Babelmandel, to the Isthmus of Suez, where it approaches to within sixty miles of the Mediterranean; lat. 12° to 30° N. Its length is about fourteen hundred miles; breadth, where greatest, about two hundred. This sea was anciently a greater channel of commerce than in modern times. Its navigation is rendered difficult by frequent obstructions from coral rocks either above or under water, by storms, and by the paucity of safe harbours. The principal harbours are Suez, at its head; Cosseir, Suakem, and Massuah, on the west side; Jidda, Jambo, Ghunfude, Loheia, Hodeida, and Mocha, on the east side. This part of the Indian ocean, was called by the Greeks the Erythrean sea, according to some accounts, from a king Erythras, of whom, however, nothing is known.

Along the coast of the Red sea, is a chain of mountains which seems to connect the northern and central chains of Africa. At the point of their union is Abyssinia, which may be denominated the Switzerland of Africa. The whole country inclines to the northwest, and is guarded toward the east and south by vast mountain barriers. The long eastern range, called Lamalmon, which bars the entrance from the Red sea, is elevated and rugged, and forms a continuous ridge. The whole range of mountains extends north and south for eighty miles. The mountains of Gorjan give rise to the Bahr-el-Azrek, or Abyssinian Nile.

Many of these mountains are very singular in their appearance, resembling the ruins of ancient walls, towers, and cities; and in some places are so steep, as to be ascended by ropes and ladders. Sometimes a circuit of rocky walls supports a plain of considerable extent, covered with trees and verdure. The actual height of the Abyssinian mountains has not been determined; but it is evident that they approach the limit of perpetual snow, which in the tenth degree of latitude, is about fifteen thousand feet. Numerous torrents occasionally roll down from these chains; and springs issue from their sides, which unite and constitute several large rivers.

THE EARTH IS BEAUTIFUL.

BY CAROLINE GILMAN.

THE whole broad earth is beautiful
To minds attuned aright,
And wheresoe'er my feet are turned,
A smile has met my sight.

The city with its bustling walk,
Its splendour, wealth, and power,
A ramble by the river-side,
A passing summer flower.

The meadow green, the ocean swell,
The forest waving free,
Are gifts of God, and speak in tones
Of kindliness to me.

And oh, where'er my lot is cast,
Where'er my footsteps roam,
If those I love are near to me,
That spot is still my home.

CALL NUMBER
CHARGED TO
VOLUME

[The Red Sea, Viewed from Ras Mahommed, on the Southwest coast of Arabia-Petra.]

[Moses at the passage of the Red Sea.—N. Poussin.]

POPULAR MEDICAL OBSERVATIONS.

POPULAR MEDICINES.

MANY *things*, says an old writer, *are written in our books, which seem to the reader to be excellent remedies; but they that make use of them are often deceived, and take for physick, poison.*

Few errours are so productive of injury to health, or so readily convert a trifling ailment into an alarming and often fatal disease, as the misapplication of medical maxims, and the consequent misuse of medicinal substances. Either long study and much experience have no superiour claims over ignorance and conjecture, or mankind are singularly heedless of their health and bodily comfort, when they sport with the most potent and dangerous drugs of the apothecary's shop, to say nothing of the poisons concealed in the innumerable patent mixtures—pills, sirups and elixirs, which they credulously swallow on the faith of empiricks, whose impudence is by far the most prominent trait in their character. In most of the trades and arts of life an apprenticeship is required before persons are deemed competent to their exercise, or to give an opinion respecting their principles and application. A man does not become a carpenter by being made the possessor of edge tools and a compass, or a shoemaker by having leather and a last, without previous instruction and practice. He who should call himself a watchmaker, and yet be ignorant of the works of a watch, their number and connexion, would be laughed at as an impudent pretender, to whom no one would think of trusting his timepiece for alteration and repair. But—mark the inconsistency of human nature! any person who garnishes the shelves of a small shop with a few gallipots and pill-boxes, and advertises a sovereign pectoral balsam or panacea, is straightway received into the confidence of the crowd, and implicit faith is given to all his boasts of cure and marvellous recoveries. Ignorant of the structure of the human body or any of its parts—ignorant of its functions, he is nevertheless allowed to treat with vulnerary salves and plasters, wounds which consist in alterations of structure; and with his pills and balsams, diseases which are the direct effect of disturbed function. That most complex and wonderful of all pieces of mechanism—the living human body—is abandoned as a fair subject on which every knave is allowed to try his hand, for the benefit of his purse; or well-meaning busybody, for the display of his or her vanity. Few of these persons pretend to the initiative of the prescriptions which they thus press on the credulous and unwary. They will most of them cite books in which are recorded the wonder-working powers of their favourite medicine: the real nature and effects of which are, however, as entirely unknown to them as colours to the blind, or sounds to the deaf. We cannot wonder then if they that make use of these things, are often deceived, and take for physick, poison.

It has been said, quaintly enough, but with great truth, that, "without exquisite knowledge, to work out of books is most dangerous." How great then must be the hazard incurred by mothers and nurses, who, assuming a symptom as indicative of the entire disease, administer to children medicines recommended in books of Domestick Practice, which a skilful physician would be fearful of prescribing after a careful examination of all the symptoms; or if he did recommend them, it would be with a great many restrictions and cautions to guard against unpleasant consequences. Parents or nurses, disturbed by the crying of a child, and its wakefulness at night, will give it a dose of paregorick or laudanum, or of some cordial or carminative, of which opium forms the most active part—because they read in the "Domestick Medicine," that laudanum sooths pain and procures sleep. They are not aware that pain and restlessness proceed from a great diversity of causes, and consequently require a diversity of remedies, or that they shall be administered at different periods, according to the nature of the malady. A child will cry, or be kept awake, from hunger, the colick, worms, a very full meal, unusual articles of food taken in the day, pain of the head preceding a regular attack of dropsy of the brain, pain in the side or a pleuritick stitch, heat, thirst, and disturbance ushering in an attack of fever. Now for all these an anodyne will be given by the parties abovementioned; the relief they think is so soon afforded, and then it is not worth while to trouble the doctor, or it is a hardship to incur the expense of his visits. A few days, sometimes weeks, pass off in this way—the elders of the family always supposing that the child will get better, and nothing alarmed so that they can deaden the pain and stay its more urgent complaints. If rather bolder practitioners, they will give sweet spirits of nitre, because they read that it cools the fever. They do not observe that it increases the heat and thirst, and distress of the stomach, and that the child is actually worse than before. Alarmed at last for the safety of the young sufferer, they send messenger after messenger for the doctor, each one more urgent than the former, claiming his immediate presence. On his arrival he makes the melancholy discovery that the time for efficient medication is past—the disease is in its second stage, and is beyond the reach of art—the same disease, which, had he been called on to treat at an early period, might have been easily arrested in its course; but not by means of the remedies which the parents and nurses had gathered the use of from the "Family Oracle," or "Domestick Medicine," or the like. Some are content to borrow prescriptions from neighbours who have been themselves the subjects of professional advice. A cough-mixture often acquires great popularity from its having been given with advantage in a particular case, by an eminent physician. He directed for his patient towards the close of the disease—others, who have borrowed it, employ it at the commencement, alleging that a cough is but a cough after all; and if neighbour Simple was cured of his by this mixture, why should not Simon Fitful be equally benefited? The little incident of a high fever being present with the cough in the second case, whereas it was absent in the first, is overlooked by these medical borrowers, who, like the monkey which cut his throat while imitating the movements of its master shaving, bring on irremediable disease by the means which, in skilful hands, gave life and health.

Calomel, confessedly a medicine of great power, and one which, in the eyes of many very learned and experienced physicians, is, except on a few carefully selected cases, apt to do much injury, is freely given in nursery and domestick practice. A child or other young person of the family is restless and rather feverish at night, and starts in its sleep, and perhaps picks its nose. The cry immediately is, worms and indigestion, for which the knowing mother or aunt has discovered a notable remedy in calomel. It is given accordingly—but without many if any restrictions on the score of regimen being imposed, and the consequence is that digestion is disturbed, and the stomach rendered still more sensible of offending causes. A fresh dose of the medicine is followed by fresh complaints on the part of the little invalid, who now becomes fretful, and excessively sensible to all external impressions; in fine, a very miserable being—all because its knowing parent or relative chose to display on it her medical reading, which must necessarily be imperfect, and a cause of errour, in place of subjecting it to the laws of hygeine, or the maxims of health about which she might and ought to be readily conversant. Perhaps after the child has been salivated with her calomel, she will be surprised at learning that she was giving *mercury* all the time.

The rule is exceedingly simple for the guidance of those who, either in their own persons, or for their friends, would wish to ward off an attack of impending disease. It is to abstain from every thing which might possibly be injurious, as food, strong drinks, active exercise, exposure to extremes of temperature, the shock of the passions, &c. Would they desire a more active and directly medicinal course, let them consult the proper directors of this course, and by no means themselves use substances which misapplied will be attended with consequences that no human power can ever after obviate or remove.

ALIMENT.

Whatever substance is taken into the stomach and there changed by digestion, so as to furnish materials for the supply and growth of the body, is properly *aliment*. Man, by his organization, especially evinced in his teeth, and the structure of his digestive organs, is fitted for being nourished by aliment taken both from the vegetable and animal kingdoms. He has teeth for cutting and tearing like the animals purely carnivorous, and others for grinding similar to the herbivorous tribe. Climate and the nature of the soil sometimes prevent his choosing the kind and variety of food which would be most acceptable to him. At the extreme north, his subsistence is almost entierly on flesh and fish; whilst in the equatorial regions, he will often be found to eat nothing but fruits and grain. It is in the temperate or middle latitudes, that he is allowed the greatest range in the indulgence of his appetite as well as for the exercise of his intellect.

The use of aliment being to repair the waste which the body suffers, and to supply the organs with nutriment for their growth and the suitable discharge of their functions, it follows that when taken in moderate quantity, and of a suitable kind, its introduction into the stomach ought not to be attended by any feeling of uneasiness or oppression: but on the contrary, by one of comfort and, as it were, of well being. When, however, food is taken in too large a quantity, that is, when the first natural sensation of content and fulness is not attended to, the person thus transgressing feels his stomach distended, his breathing laborious and difficult, disinclination to motion and thought. He is dull and drowsy and often falls asleep. This excessive repletion often indulged in, so as to become a habit, gives the stomach and other organs concerned in digestion, an unnatural energy, and a predominance over the outer senses and the brain, or the organs of intellect and sentiment. The glutton like a true boa constrictor has hardly finished his repast, when he is seized with a general torpor, and an irresistible desire to sleep: he becomes fat—his features lose their distinctive outline and character, and his limbs refuse to perform their office, or do it slowly and painfully. This state of excessive fulness and corpulency disposes its possessor to gout and other violent inflammatory diseases; and if he make any intellectual effort, or indulge in any strong emotion that shall excite his brain, little accustomed to be exercised, he is in danger of perishing from apoplexy.

It is hence obviously impossible to lay down, with precision, rules to regulate the quantity of aliment necessary to properly nourish an individual, and necessarily absurd in any man to forego the measure of his own appetite, and feeling, consequent on its proper gratification, for the practice of his companion at table, or neighbour, preaching advice. Age, sex, temperament, climate, seasons, exercise, the nature of the occupation, and the proportion of sleep and wakefulness, are all modifying circumstances in fixing a scale for the regulation of our food in regard to quantity not less than quality. We may venture on a few inferences from many observations on persons in health as well as from experiments on those whose digestive system has been affected by wounds or diseases, of the nature and details of which our readers need not be here informed.

Animal food allays more completely, and for a longer period than vegetable, the sensation of hunger.

Animal food is more readily attacked by the digestive organs than vegetable; that is to say, it is longer retained, and more completely changed, and during the process of digestion it calls the other organs, such as the heart, lungs, brain and skin, into more active sympathy.

The retention of food, whether animal or vegetable, in the stomach, is proportionate to the quantity of nutritious juices it contains. The conversion of aliment, by the stomach and continuous proportion of the digestive canal, into a homogeneous mass, calculated to form chyle and blood, is in proportion to the wants of other parts Thus when a person has fasted for a length of time, and there is languor of the body generally, the food that is taken into the stomach is more completely changed, than if it had been swallowed at the usual hour of a repast, or without a decided sensation of hunger.

The more simple the aliment, and less altered by culinary processes, the slower is the change in digestion, but at the same time the less is the stimulation and wear of the powers of life. The Bramins of Hindostan, who live on exceedingly simple food, are long livers, even in a hot and exhausting climate. The peasants of Switzerland and of Scotland nourished on bread, milk, and cheese, attain a very old age, and enjoy great bodily strength.

We learn from the foregoing, that if it be desired to give nutriment in a small bulk, to obtund completely the sensation of hunger, and restore strength to the body, a small quantity of animal will be preferable to much vegetable food.

Where on the other hand there is already too much excitement of the body generally, from fulness of the blood vessels, or of any one of the organs, owing to a wrong direction of the blood to it, animal food, by being long retained in the stomach, and calling into greater action other parts during digestion, as well as furnishing them with more blood afterwards must be obviously improper. The more of this kind of food taken under such circumstances, the greater will be the oppression; and the weakness, different from that of a healthy person long hungered, will only be increased by the increased amount of blood carried to the diseased part.

EXPERIENCE OF A SNUFF-TAKER.

"I would return you my thanks for urging me so successfully to abandon the taking of snuff. Although I knew every truth you stated and had weighed its detrimental effects on my health and personal cleanliness; yet I viewed myself as doomed to suffer all the bad consequences without any prospect of conquering its baleful influence; as I had made frequent attempts, but always failed. But I am happy to say from the afternoon we had the long conversation on the subject, I have not taken one pinch of snuff or used tobacco in any way. The consequence is I enjoy better health than I have for many years; I am sure I have increased in weight twelve or fourteen pounds. I have no violent nervous affections since; and my appetite scarcely ever better. I have not had a single attack, since the morning I quitted the snuff, of unpleasant pains running out to the ends of my fingers and toes; and which I cannot represent more aptly than the rolling of agitated water against the shore, and as often receding and returning. These affections I am well aware, are dyspeptic; and those afflicted with the disease well know what I mean. In short I feel gratitude to God for strength to overcome so pernicious a habit, and which, I trust, I shall never return to again."

Few persons, even on the score of economy, can afford to lose one of their senses; and yet the habitual snuff-taker consents to have greatly impaired if not destroyed the senses of smell and taste; for both together with the voice, suffer by this vile practice—as repugnant to true fashion and politeness, as it is injurious to health. At first had recourse to by some for the relief of headache or disorded eyes—snuff, when long continued brings on those very evils it was intended to remove. Even when it does not escape into the throat and pass thence into the stomach its repeated application to the sentient surface constituting the sense of smell, affects by sympathy the stomach, and gives rise to indigestion and a host of nervous disorders, such as tremors, palsy and even epilepsy, and sudden death. With an enfeebled state of the brain and nervous system come loss of memory, and great inequalities of temper and manner. The pernicious effects of the tobacco are not unfrequently heightened by the addition of other noxious or poisonous ingredients, mixed with the powder in order to add to the weight of the snuff or to make it more stimulating. To accomplish the first intention, salt or red lead, which last also improves its colour; and for the second purpose, powdered glass, sal ammoniac, Cayenne pepper, and even more offensive articles, are added.

No person can be ignorant that snuff possesses all the powers of tobacco. The celebrated Santeuil, experienced vomiting and horrible pains amid which he expired in consequence of having drunk a glass of wine into which had been put some Spanish snuff. A woman applied to three children afflicted with scald head, a liniment consisting of powdered tobacco and butter soon after which they experienced vertigo, violent vomiting and fainting.

One of the most virulent and deadly poisons, the oil of tobacco, is obtained by distilling the leaves of the plant. An ingenious medical gentleman has suggested as very probable, the idea that the '*cursed hebenon*,' which he presumes was orignally written *henebon*, and by which Shakspeare describes the king of Denmark to have been poisoned, was no other than the essential oil of tobacco.

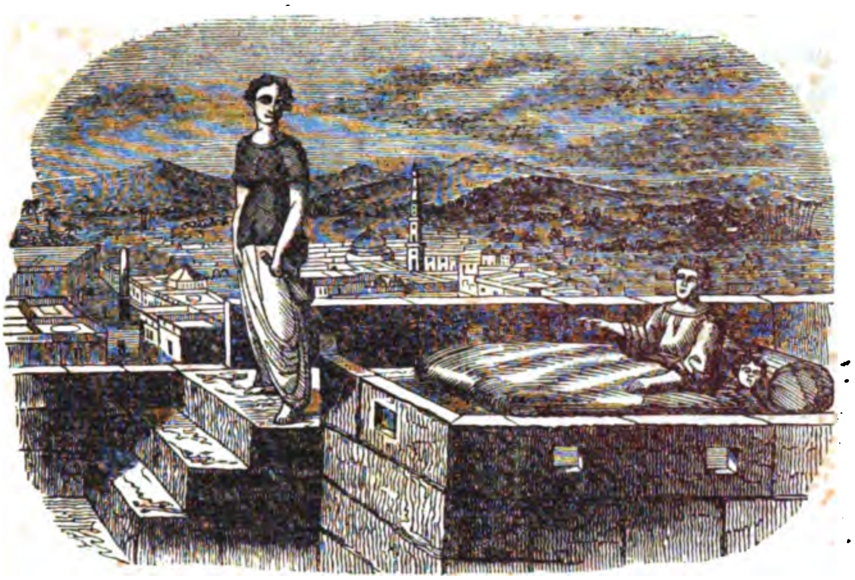
It is in vain that the advocates of snuff-taking allege that they become accustomed to its use and do not experience those unpleasant symptoms, such as giddiness, and sickness of the stomach and great languor, and prostration under which beginners at times suffer. These old snuffers when ruffled or disturbed from any cause, consume a much larger quantity than usual of their powder, and suffer accordingly. The laws of habit are to them no security since they can give no pledge of their not transgressing what they would call their daily limits.

A reform of this like of all evil habits whether of smoking, chewing, drinking and other vicious indulgences, to be efficacious, must be entire and complete from the very moment when the person is convinced either by his fears or his reasons of its pernicious tendency and operation. A single day, aye, an hour spent with a friend or a few old boon companions, will often render nugatory a partial reform of months duration. Abstinence, resolute and entire abstinence, is the only means of safety and immunity. The chain must be entirely broken—so long as the links are entire no matter how attenuated, they are ready at any moment to be coiled round and round us until we are pinioned and shackled beyond the possibility of escape or hope of freedom.

Journal of Health.

Revolutionary Reminiscence.—The following is a correct list of the soldiers furnished by each State during the revolution. The free population of Massachusetts was in 1790, 475,000; the population of Virginia about 520,000, of New Hampshire 141,000.

	Regulars.
New Hampshire,	12,407
Massachusetts,	67,907
Rhode Island,	5,908
Connecticut,	31,935
New York,	17,781
New Jersey,	10,726
Pennsylvania,	25,678
Delaware,	3,386
Maryland,	13,912
Virginia,	26,678
North Carolina,	7,363
South Carolina,	6,147
Georgia,	2,619



[Battlement of Roof.]

ORIENTAL HOUSES.

The roofs of Oriental houses are always flat. They are generally composed of reeds, branches, and twigs, laid over the rafters, the whole trodden into a somewhat compact mass, and covered externally with earth, clay, or plaster, more or less tempered in different countries, and sufficiently calculated, with proper care, to keep out the infrequent rains of climates naturally dry. As the roof is much resorted to by the people on various occasions, particularly to enjoy the cool of the evenings, and to sleep in the open air during the summer nights, a parapet, to prevent the danger of a fall, is evidently necessary. In fact, most eastern houses have parapets, built with brick or mud, and of various heights, from three to six feet, which not only prevent this danger, but secure some degree of privacy to this open bed-chamber. The latter would indeed seem to be the primary object, as the side of the roof that overlooks the inner court of the house itself is generally less guarded than that toward the street. The danger of a fall is equal either way, but the writer has known it very common for roofs to have a high wall toward the street, *without any* fence toward the court-yard. As the former is almost never omitted, and the latter often is, we incline to think that the present direction applies particularly to the necessity that there should be a defence toward the interiour area of the house itself. The latter, when it does exist, is usually either a wooden balustrade or a parapet, much lower than that on the exteriour wall of the house. The houses of the ancient Greeks and Romans were also built with flat roofs, so that we read of their walking and taking the air upon them, and also standing there to see the show and publick processions. Indeed the custom of sleeping on the housetop was not unknown, or the danger from their being without parapets. The accident which happened to Elpenor, in Homer, (Odyssey, x.,) might easily occur in an Oriental house wanting a proper defence on both sides of the roof. This person—

> ———"Seeking cooler air, which, overcharg'd
> With wine, he needed, on the palace-roof
> Of Circe slept, apart from all the rest.
> Awaken'd by the clamour of my friends
> Newly arisen, he also sprang to rise,
> And, in his haste, forgetful where to find
> The deep descending stairs, plung'd through the roof.
> That shock his neck-bone, parting at the joint,
> Sustain'd not, and his spirit sought the shades."—Cowper.

INDIAN COMMENTARY.

Cast thy bread upon the waters; for thou shalt find it after many days.—Eccl. xi.

Some years ago one of the preachers of the Mohegan tribe of Indians, which tribe is situated on the Thames, between Norwich and New London, was preaching on the above text. To illustrate his subject and enforce the doctrine of Charity, he brought forward a circumstance that transpired in his early days. To use his own language, he observed—"A certain man was going from Norwich to New London with a loaded team; on attempting to ascend the hill where Indian lives, he found his team could not draw his load, he came to Indian and got him to help him up with his oxen. After he had got up he asked Indian what was to pay. Indian tell him to do as much for somebody else. Sometime afterward, Indian wanted a canoe—he went up Shetucket river, found a tree and made him one. When he got it done he could not get it to the river. Accordingly he went to a man and offered him all the money he had if he would go and draw it to the river for him. The man observed, he would go. After getting it to the river, Indian offer to pay him. No, said the man; Don't you recollect so long ago helping a man up the hill by your house. Yes. Well, I am the man—there take your canoe and go home." So I find it after many days. Rel. Messenger.

BIOGRAPHY.

WILLIAM PRESCOTT.

[From Knapp's American Biography.]

WILLIAM PRESCOTT, was born in 1726, at Groton, in Massachusetts, and was an officer of the Provincial troops at the capture of Cape Breton in 1758. He was distinguished in the campaign and was offered a commission in the regular army, which he declined. He was engaged in agricultural and civil employments until near the commencement of the Revolutionary war. He was a member of the Provincial Congress, in 1774 and when the militia was organized, by that body, he was appointed to the command of a regiment. He marched to Concord as soon as he heard that Gage had sent Pitcairn with forces to destroy the stores at Concord; before he knew one drop of blood had been spilled. The share he had in the memorable battle of the seventeenth of June, 1775, should not be forgotten. He proved himself worthy of command by his prowess on that day.

The American army had been quartered at Cambridge nearly two months, and no blow had been struck to rid the country of the British troops or to encourage the natives; some uneasiness seemed to show itself in the camp, and more abroad, that greater energy was not shown; but the wise thought to conquer by *Fabian wisdom*, while others were for decisive measures. The army at Cambridge was known to be large enough to demolish the British, if they could be got at. In this state of feeling, it was thought proper to make some demonstrations of courage and intention of acting *offensively* and *fearlessly*. Col. Prescott was sent with the fragments, or rather, the skeletons of three regiments, on the night of the sixteenth of June, to occupy a station on Bunker's Hill. On viewing that eminence he found it an ineligible spot; and he looked along to the right, and found that a spur of that hill which was now called Breed's Hill, was the most proper situation, in every respect for a battle-ground. Considering that they were within the limits of their orders, Prescott and Col. Gridley, the engineers, began a redoubt on the right of Breed's Hill. It was about one hundred and forty feet square, with two open passages for ingress and egress. On the left of the redoubt, running northeasterly, was a breastwork of sods, not much over four feet high; but not, as has been stated, extending to Mystick river; it did not extend one quarter of the way to it. The line from this breastwork was made of two post-and-rail fences, placed about four feet apart in parallel lines, and between them was trod the newly-mown grass, making quite as good a screen for the militia as the redoubt or the breastwork.

General Ward, concluding from the firing from the summit of Copp's Hill in Boston, that the British would make a struggle to get possession of the works, offered to relieve Prescott and his men, but they unanimously declined the offer, but earnestly insisted on reinforcements. These were reluctantly given, as the commander-in-chief thought that an attack on his camp was contemplated, and in such case his fortified camp, indifferently fortified as it was, was a better place for a general action than Bunker's Hill.

Early in the morning, from the battery on Copp's Hill, one of the men in or near the redoubt was shot and was instantly buried on the spot; but although the roar of the cannon from Copp's Hill was incessant, no further damage was done by their shots; and in aid of this battery, the Lively, man-of-war, was brought to bear, and in fact she began to cannonade at early dawn.

General Gage wishing to drive the Provincials from the hill, sent Major-General Howe, and Brigadier-General Pigot, with ten companies of grenadiers and ten of light infantry, with some artillery to perform this service. These generals reconnoitring the American forces, on their arrival at Morton's Point, thought best to wait for reinforcements from Boston. For these, Howe waited from noon to about three o'clock, before the battle was commenced.

The British began a slow march up the hill in two lines, stopping at times to give the artillery a chance to play. But the angle of elevation was such that it did but little execution. The Provincials wasted no ammunition; they had but a scanty supply. They were ordered to put four buckshot to a bullet, and to reserve their fire until the enemy were at blankshot distance. At this moment they poured in upon the approaching foe a most destructive volley. The effect was not more destructive than appalling. The British soldiery, expecting nothing but random shots from undisciplined militia, were astounded at such deadly fires, and their line was broken in confusion. Some companies had not twenty soldiers fit for duty when they were about to rally. The British officers had the greatest difficulty to bring their troops into line again. At length they came up a second time toward the works, but with some wavering; and in less than fifteen minutes their line broke in still greater confusion than before. Clinton saw this from Boston, and hastened over to assist Howe. Both the generals addressed the soldiers; called to mind their former wreaths of glory, and the everlasting disgrace of being beaten by raw militia. Howe swore to them that he would never survive the disgrace, if they were beaten that day. By this time, Charlestown, consisting of four hundred houses, was in a blaze. This Clinton had done to terrify the neighbouring army. On the third attack they were under the necessity of resorting to skill, not daring to put it on the the score of bravery a third time. Pigot, with a considerable force, took a circuitous route around the south side of the hill, and came upon the southwestern angle of the redoubt, and instantly scaled the slight works. Pitcairn was with him, and was shot through the body, as he was about to leap into the redoubt. Pigot, being a short man, was lifted by his soldiers on the sods, and jumped into the area without harm. The Provincials were now attacked on the east and on the west; their ammunition was exhausted; and they had few or no bayonets; and after beating their assailants a while with the butts of their guns, Prescott ordered a retreat. Those at the breastwork retreated, and those at the rail-fence followed, over Charlestown neck, northward,

Until the commencement of the retreat, but few of the Americans had been killed. Their unwillingness to leave the ground at the proper time, was the cause of the considerable number of killed and wounded. Capt. Knowlton having a fine large company near Mystick river, moved up in good order, and covered the retreat of those from the redoubt and breastwork. The battle ended between five and six o'clock. The wind during the fight was brisk and westerly, and blew the smoke directly into the face of the enemy; but as the smoke arose over the heads of the British, the Americans, as it were, looking under the cloud, saw where to fire. Prescott was in all the fight in the redoubt; the other portion of the Massachusetts militia at the breastworks. The New Hampshire troops, under Stark, Dearborn, and others, were at the rail-fence. They were marching from their native state towards Cambridge, and went on to the battle-ground by their own impulses, not having received any orders from the commander-in-chief.

The British had between three and four thousand in the fight. They acknowledged ten hundred and fifty-four killed and wounded, with a great proportion of officers. Their number was most unquestionably larger; for they brought between three and four hundred corpses of the slain and buried them in the corner of a new burying-ground at the bottom of the Common in Boston. The others were buried on Breed's Hill, where they fell.

The Americans had fifteen hundred in the fight, but perhaps there were a few more at times, for volunteers came on to the ground, expended their powder, and retreated, when they could do no more service to the cause. The Provincials had one hundred and thirty-nine killed, and three hundred and fourteen wounded and missing. The officers who fell on our side, were Col. Gardner, of Cambridge, Lt. Col. Parker, of Chelmsford, and Majors Moore and M'Cleary—all men of distinction and value, and heroes in the cause—with Major-General Joseph Warren.

Warren assumed no command on that day. He had been commissioned as a major-general by the Provincial Congress but four days previous, and had not taken any command; nor had he, in fact, been sworn into office, except as every one had an oath in heaven to live free or die. Warren was, at the moment of his fall, president of the Provincial Congress, and Chairman of the Committee of Safety. He had put some one in the chair, and mounted his horse at Watertown, where the legislature was in session, to come and encourage his fellow-citizens in the fight. When he entered the redoubt, Prescott offered him the command, but he declined it, saying, "I come to *learn war* under an experienced soldier, not to take any command." He was the martyr of that day's glory. His death was felt as a calamity to the *cause*, and to the *nation*. He was in the prime of life, being only thirty-five years of age, a spirit as bold and dauntless as ever was blazoned in legends, or recorded in history. He was a prudent, cautious, but fearless statesman; made to govern men, and to breathe into them a portion of his own heroick soul. His eloquence was of a high order; his voice was fine, and of great compass, and he modulated it at will. His appearance had the air of a soldier—graceful and commanding, united to the manners of a finished gentleman. The British thought that his life was of the utmost importance to the American army;—of so much importance that they would no longer hold together after his fall. They sadly mistook the men they had to deal with. His blood was not shed in vain; *it cried from the ground* for vengeance; and his name will become a watch-word in the hour of peril and glory.

The name of the humblest individual who perished in that fight will be remembered by the town or parish from whence he came, and be generally enrolled on the books of the corporation. Young, substantial yeomen, or industrious mechanicks, they were owners of the soil for which they fought.

The battle-scene was imposing; the ground was in the immediate neighbourhood of a city, whose inhabitants were watching the progress of events, anxious for the nearest friends, while the roar of cannon from ships-of-war, and from floating and stationary batteries, was followed or commingled with incessant volleys of musketry; a well-built, compact town, was seen in one mass of flames—and all this, but the commencement of troubles—was a sight which was appalling to every American, and seemed to shake even the enemy, mind and body, together. The British troops, in considerable numbers, occupied the hill that night, and enlarged the redoubt to nearly twice the original extent; but they did not venture to light their fires—they labored by the sinking, flickering lights which shot up from the smouldering ruins of Charlestown.

For those struggling for liberty, the event of this battle was most fortunate. The American troops had done enough for honour; enough to produce an impression of their prowess, on the minds of their enemies; enough to give them confidence in themselves; and to show that they had learned something in the way of preparing themselves to correct the errours of judgement in planning a fight. They suffered enough to feel their loss deeply, and yet not sufficiently, in any way, to weaken their forces. The wound received was too deep to be healed at once; the sight was too awful to be soon forgotten.

If the army had come down from Cambridge and Roxbury to the succour, the British would have been destroyed altogether; but with the disposition of the king of England at this period, and the spirit of the ministry, the whole force of the British nation would have been brought to crush us at once.

Col. Prescott was a noble, bold, brave, country-gentleman, whose heart was patriotick to the very core. Where danger was, there he was to be found. The good of his country was his chief, his sole desire. He was again found in arms at the capture of Burgoyne. At this event he considered the freedom of the country secure, though there might be much hard fighting to come. He resigned his commission and retired to his farm in Pepperill, a new town taken from Groton the place of his nativity. He was several times sent to the legislature and was an efficient member of this body. He suffered with others of that band of freemen who achieved our independence, by the depreciation of paper money. What they received as a representation of specie became worthless as rags, an eyesore to the possessor, and a stain on the page of our country's history. Col. Prescott died in 1795, in the seventieth year of his age; leaving an only son, Judge William Prescott, a statesman and jurist, who has ably sustained the rights and principles for which his father fought and bled.

ΓCH OF THE LIFE OF THE HON. NATHANIEL BOWDITCH.

'rom the Boston Daily Advertiser of March 17, 1838.]

gives us pain to announce the decease of our guished townsman, Dr. Bowditch; which took yesterday, at one o'clock, after an illness of al weeks.

e death of this eminent man will be felt in ica as a national loss. His name was identi- /ith the science of his native country; and our ıal character with men of science abroad, is ted to no one individual—with the exception, ps, of Dr. Franklin—so much, as to him.

Bowditch was born on the twenty-sixth of ı, 1773, at Salem, in the state of Massachu- In his education, he had no other advantages those afforded by the common town-schools, ı at that period, were comparatively meager, ıadequate to the great purposes of disciplining .oring the mind with knowledge.

the usual age, he was placed as a clerk, or ap- ce, in the store of a merchant, in Salem; and, in that situation, it is said, he used to employ isure time in his favourite science of mathe- ks, and various practical subjects connected t.

attention was directed, at an early age, to the *pia* of his great master, Newton. But, as this was published in the Latin language, which l not then learned, he was obliged to begin his g of it, by asking some of the Cambridge stu- during their vacations at Salem, to explain it ı in English. He soon discovered, however, is own knowledge of the subject, with the aid mathematical processes and diagrams on the of the Principia, enabled him to comprehend asoning contained in the modern and technical of the work, more readily than he could do he help of the superiour knowledge which the 'sity students possessed of the Latin of Cicero 'irgil; and he was soon convinced that his st course would be to acquire a knowledge of ıguage for himself; which by great perseve- he accomplished, and was enabled to read ork of science in it. And thus he was anoth- tance, like that of the ancient Greek writer, elates of himself, that during his residence at , he obtained a knowledge of the *language* of omans, by his knowledge of the *subjects* which liscussed in it. He afterward learned French, : purpose of having access to the treasures of h mathematical science; and, at a late period life, he acquired some knowledge of the Ger- ınguage.

ittle circumstance connected with his study of ɔn's Principia, will not be uninteresting to the d and the unlearned. The Latin copy of it, Dr. Bowditch used, was presented to him by cantile friend in Salem, who made no preten-) science, and would never have thought of ıg the work; but he had preserved it in his ibrary of popular works, as a book that possi- ight one day be of use to some person. By a kable coincidence of circumstances, the vol- ame to the knowledge of Dr. Bowditch; and end, upon being requested to lend it, with great lity presented it to him—the man who, above all others in the country, was the best able to make the most advantageous use of it. So far as great effects may be said to flow from small causes, what important consequences may have followed from the preservation of this single and apparently worthless volume, by an individual who could make no use of it! Dr. Bowditch sometimes alluded to this occurrence; and, on the occasion of presenting a copy of his La Place to a friend—who declined taking it because he was no better able to read it, than his mercantile friend could the Principia—delicately insisted upon its acceptance; and, in the last resort, reminded his friend, that if not useful to him personally, it might, perhaps, be placed in the hands of some one, to whom it might be valuable, as the copy of the Principia had been to himself.

Dr. Bowditch did not remain long in the situation of a merchant's clerk. His mathematical talent, in a town eminently distinguished for nautical enterprise, could not fail of being called into exercise, in connexion with the art of navigation; and a large portion of the well-known skill of the navigators of Salem may justly be considered as the fruits of the instruction which may be traced, directly or indirectly, to his scientifick acquirements. He was, besides, a practical navigator himself for a few years; principally, if not exclusively, in the East India voyages, which gave him the most favourable opportunities of rendering his mathematical studies practically useful to the nautical interest of his country.

At that period, the common treatise on navigation was the well-known work of Hamilton Moore; which has occasioned many a shipwreck, but which Dr. Bowditch, like other navigators, was obliged to use. But, upon examining it in his daily operations, he found it abounding with blunders and overrun with typographical errours, particularly in the nautical tables, in which, above all parts of the work, great accuracy was indispensable; of these last errours, many thousands, of more or less importance, were corrected in his early revisions of the work. He published several editions of Moore's work under that author's name; but the whole fabrick at length underwent so many changes and radical improvements by the addition of new, and the rejection of old and worthless matter, as to warrant his publishing it under his own name; and the work of Moore is now only remembered from its having been superseded by "Bowditch's Navigator."

It may be added, that he was enabled to give the greater accuracy to his work by means of a collection of manuscript journals of his seafaring townsmen, preserved in the valuable East India Society's museum, in Salem. By a rule of that association—which is believed to have been proposed by Dr. Bowditch—each member was required to carry with him on every voyage, a blank-book, methodically arranged, for the purpose of keeping a journal of observations and remarkable occurrences; the journals, (now amounting to many volumes,) at the end of the voyage were returned to the museum, and they form a repository of innumerable observations in nautical and geographical science not to be found in any other sources.

In connexion with this part of the subject, it should be further observed, that Dr. Bowditch also employed himself during several seasons (1805, '6, '7,) in making an elaborate hydrographical survey of the harbour of Salem, with the adjacent harbours of Marblehead, Beverly, and Manchester; of which he published an admirable chart of surpassing beauty and accuracy. With such extraordinary exactness was this laborious work performed, that the pilots of the port discovered, and were the first to observe to the author, that many of their landmarks —which, however, Dr. Bowditch did not know to be such—were in fact laid down with such perfect accuracy in the survey, that the various ranges on the chart corresponded with the utmost possible precision to those of the natural objects themselves.

The ardour and perseverance which distinguished Dr. Bowditch through life, were very early conspicuous in the prosecution of his mathematical and philosophical studies. While his pecuniary means were very limited, he used to make copious abstracts of the scientifick papers in that immense repository, the Philosophical Transactions of the Royal Society of London; this labour was continued through many years; and the numerous large volumes of these manuscript abstracts in his library, embracing a great portion of that whole work, still remain the testimonials of his untiring industry and zeal in the cause of science.

During a large part of his life he was a principal contributor to the Memoirs of the American Academy; and it is unnecessary to add, that his communications are among the most important in that work. He is also author of a few reviews in the leading journals of the time.

In the year 1806, at the particular instance, as it was said, of the late Chief Justice Parsons—whose extraordinary attainments include a knowledge of the higher branches of mathematicks—Dr. Bowditch was elected professor of mathematicks and natural philosophy in the university of Cambridge. He could not, however, be persuaded to accept the office; principally, it is believed, if not wholly, from an apprehension, that the circumstances of his not having been educated at that university might render the discharge of his duties less satisfactory to himself than he could wish. Those who knew him best, however, often remarked upon his extraordinary power of communicating instruction in the clearest manner. And Chief Justice Parsons, as competent a judge in the case as could be found in any country, has said to the writer of this notice, that of all the men he had known, he had never found one who could make any mathematical proposition so transparently clear and intelligible by mere oral statement, without a diagram or figures, as Dr. Bowditch could. It may also here be added, that Dr. Bowditch had the highest respect for the great mathematical attainments of Chief Justice Parsons; and it may be interesting to many persons to know, that under the Rules of Lunar Observations in the "Practical Navigator," Dr. Bowditch has introduced an improved method of correcting the apparent distance of the moon from the sun or a star, which was suggested by that great man: whom he justly characterizes as "eminently distinguished for his mathematical acquirements."

It should have been before stated, that after quitting the life of a navigator, Dr. Bowditch held the office of president of a marine insurance company in his native town for several years; until, upon the establishment of that well-known and invaluable institution, the Massachusetts Hospital Life Insurance Company, in Boston, his talents were deemed indispensable in its organization and management; and he was invited to take charge of it, under the title of its Actuary. The great exactness of calculation and the order and precision introduced by him into that institution, will long attest the comprehensiveness of his views and his facility in the practical management of its affairs.

On the occasion of leaving his native town to enter upon this new office, his townsmen spontaneously united in a publick dinner, as a testimonial of their respect and grateful recollection of his eminent services to his country and of his great private worth.

While he resided in Salem he undertook his well known translation of La Place's *Mecanique Celeste*, accompanied with his invaluable commentary upon it. This truly gigantick task was begun in the year 1815, and has been the steady occupation of his leisure hours to the time of his death. His elucidations and commentaries, while they show him to have been as thoroughly master of that mighty subject as La Place himself, will make that great work —the most profound of modern times—accessible to innumerable students, who without such aid would be compelled to forego the use of it.

The labour of translating and commenting on the whole of that work had defied the zeal and industry of the scientifick men of Great Britain; and one of their leading journals gives due credit to America for this extraordinary and honourable achievement in the cause of science, which had not been accomplished by any individual among the numerous scientifick associations of Great Britain.

"The idea," says the journal alluded to, "of undertaking a translation of the whole *Mecanique Celeste*, accompanied throughout with a copious running commentary, is one which savours, at first sight, of the *gigantesque*; and is certainly one which, from what we have hitherto had reason to conceive ot the popularity and diffusion of mathematical knowledge on the opposite shores of the Atlantick, we should never have expected to have found originated—or, at least, carried into execution, in that quarter. The part actually completed (the first volume) is, with few and slight exceptions, just what we could have wished to see—an exact and careful translation into very good English—exceedingly well printed, and accompanied with notes appended to each page; which leave no step in the text, of moment unsupplied, and hardly any material difficulty either of conception or reasoning unelucidated."

The progress of Dr. Bowditch's last illness was so unremitting, that he was not able to complete the final revision of the whole of this great work. He had, however, corrected the last sheets of the fourth volume a few days before his death, and while his physical powers were scarcely capable of executing what his clear and unclouded intellect dictated. The fifth, and only remaining volume is, comparatively, of little importance, and it would probably have had but slight revisions, even if he had survived.

On this great work, Dr. Bowditch's fame throughout the scientifick world will ultimately rest. And surely, the most lofty ambition could not desire a more solid and lasting monument—a monument, which will endure until that day of desolation shall arrive, when no one of the human family shall remain to contemplate the mighty fabrick of those heavenly systems, whose structure and laws are inscribed upon it.

The long study of the French mathematicians, in connexion with Dr. Bowditch's labours on La Place's work, had given him a partiality for the French, or Continental mathematical school, so far as that may be said to differ from the English. And on one great question, which in the age of Newton raised such a furious tempest of altercation between the English and Continental mathematicians—the quarrel between Newton and Leibnitz for the immortal invention of the differential calculus—Dr. Bowditch did not consider Newton as the exclusive discoverer, but, as the more candid of all parties now generally agree, that he and Leibnitz were both original discoverers of that wonderful method of analysis, and that neither of them was a plagiarist from the other, as each had been illiberally called while the controversy was raging.

The reputation of Dr. Bowditch was such, that he had for many years been a member of various learned societies in Europe and America; and he was one of the few Americans who have been Fellows of the Royal Society of London. In his native state he has for some years been the President of the American Academy of Arts and Sciences, which is indebted to him for a large share of the reputation it has enjoyed.

Such is a brief outline of the intellectual character and scientifick labours of this eminent man. It need only be added, that in social life he was distinguished for rigid integrity, extraordinary energy of character, and unremitting zeal and perseverance in whatever he undertook to accomplish; his manner was ardent and indicative of that warm heart which has now ceased to throb for those friends who enjoyed the happiness of his society; his deportment was, in an extraordinary degree, unaffected and simple; and he had a frankness in expressing his opinions, which an age of artificial civility would feel to be a standing reproof of its own heartlessness, and would hardly consent to rank among the virtues.

How saddening is the reflection, that these high intellectual and moral endowments, from which we had fondly, perhaps unreasonably, hoped for still further benefits to the world, should now lie powerless, prostrate, and in ruins before us! Never has there been an individual in our country, solely devoted to the pursuits of science, and the tranquil walks of private life, and shunning the allurements of that political notoriety which is the distempered and all-absorbing passion of the day, whose death has been more generally and deeply lamented—

Multis ille bonis flebilis occidit—
We read his history in a nation's eyes;

and the demonstrations of sorrow in every face are at once a spontaneous homage to science, and a heartfelt tribute to eminent private worth.

The fund given by Doctor Franklin to the city of Boston, to be loaned to young mechanicks on setting up in business, now amounts to *twenty-three thousand four hundred and fifty-three dollars.*

SAVAGE FORTITUDE.

[From Father Gumella's Account of the Oroonoka Indians in South America.]

The man, who aspires to the character of a hero in this country, begins by attaching to himself a certain number of men, whom he gains either by the reputation of his valour, or by the interest of his relations and friends. When his adherents amount to one hundred, he provides plenty of Chica, an intoxicating liquor, invites the Caciques and Captains of his station, recites his exploits, and requests that he may undergo the trial, in order to his being received a chief or captain. The judges having admitted his petition, place him naked in the middle of the room, and the eldest captain, with a well-knotted whip, gives him a handsome number of lashes, at different times, which ceremony continues till all the chiefs are successively spent with flagellating the poor wretch. All present keep a profound silence during the operation, observing whether the candidate bears torture like a man of courage: for the slightest plaint is enough to make them refuse him their suffrage; and to exclude him from the two remaining trials. But if, without any sign of impatience, and like a statue he endures this deluge of stripes, that flay him alive, and cover him with gashes, they are lavish in their applauses, and all get drunk with him in demonstration of their joy.

Thus ends the first trial. But this, barbarous as it is, is nothing when compared with the following: After the candidate has allowed himself some months for the healing of his lacerations, he provides himself with the same quantity of Chica, appoints a day, and the chiefs being met, he is put naked into a cotton hammock, suspended between two trees, the hammock wrapped round him, and bound with three cords, one at each end, and one in the middle; then the captains open a little the two ends of the hammock, and blow into it through a hollow cane, some thousands of the large pismires of this country, whose bite is such, that when you would pull them off they will sooner leave their heads, than let go their hold. Thus he lies in the midst of five or six thousand pismires, who gnaw his flesh on all sides without his being able to avoid them, or even to stir himself; for the formality of this trial, requires perfect stillness, and its good or bad issue depends on that, or on a single motion, manifesting his impatience of the pain these devouring vermin give him. And if by chance there should the least sign escape him, when they bite the eyelids, or other delicate parts of the body, his cause is lost, his trial turns to shame, and he is rendered incapable of obtaining a captain's rank. But on the contrary, if he suffer with courage, during the time prescribed by their laws they congratulate him, and hasten to deliver him from the insects that cover him from head to foot; this is done by means of an ointment which obliges them to let go their hold; when they all go to drinking till they can drink no more; for thus commonly they finish their assemblies on great affairs.

The third proof, which we may call infernal, is made in the following manner: The chiefs being met, a hurdle, or kind of wooden gridiron, is fixed about an ell from the ground, sufficiently large and strong to receive the body of a man. On this they lay some plantain leaves, which are about an ell long and half an ell wide. The candidate places himself on his couch, or rather scaffold, lying on his back, and holding in his mouth a hollow cane, which is to serve him in breathing; then they cover him entirely and closely with plantain leaves, observing to pierce those that are over his head, so that his cane may pass through them. A fire is then kindled under him so ordered that the flames shall not reach the grate, but may give heat enough to broil this ignorant victim. Some appointed for that purpose are employed in augmenting, or diminishing the fire, that it may neither fall short of nor exceed, the degree prescribed by the law. While others observe with care whether the patient moves or not, the least motion being sufficient to exclude him forever from the station he aspires to. Others are placed near the cane to observe whether his breathings are weak or strong. And when the time of trial is expired, they immediately remove the covering: If the candidate is found dead, he is lamented with tears and cries by the whole assembly; but if living, the woods resound with their acclamations; they felicitate him, preserve his health, and hold his valour sufficiently proved, to rank with a Cacique or Chief.

USEFUL KNOWLEDGE.

JAPANNING.

Japanning is the art of varnishing in colours. All substances that are dry and rigid, or not too flexible, admit of being japanned. Wood and metals require no other preparations than to have their surfaces perfectly even and clean: but leather should be securely stretched, either on frames or on boards, as its bending would crack and force off the varnish. Paper should be treated in the same manner, and a previous strong coat of size; but it is rarely japanned till converted into *papier mache*, or wrought into such form that its flexibility is lost. The article to be japanned is first brushed over with two or three coats of seed-lac varnish, to form the *priming*. It is then covered with varnish, previously mixed with a pigment of the teint desired. This is called the *ground colour*; and if the subject is to exhibit a design the objects are painted upon it in colours mixed with varnish, and used in the same manner as for oil-painting. The whole is then covered with additional coats of transparent varnish, and all that remains to be done is to dry and polish it. Japanning requires to be executed in warm apartments and the articles are warmed before the varnish is applied to them. One coat of varnish also must be dry before another is laid on. Ovens are employed to hasten the drying of the work. The same pigments which are employed in oil or water answer also in varnish. For painting figures shell-lac varnish is considered best and easier to work; it is therefore employed in most cases where its colours permit. For the lightest colours mastick varnish is employed, unless the fineness of the work admits the use of copal dissolved in alcohol.

TO MAKE COLOURS FOR PAINTING.

Black.—This colour absorbing all the rays of light and reflecting none, occasions its darkness. There are several species of blacks used in painting, of which the following are the principal. Frankfort black, of which there are two sorts, one a natural earth inclining to blue; and the other made from the lees of wine burnt, washed, and ground with ivory, bones, or peach-stones. This black is much used by the copperplate printers, for their fine ink to work their engravings. Ivory black is burnt ivory, or bone reduced to powder, and ground in oil or water as required. Spanish black is burnt cork reduced in a similar manner. Harts black is that which remains in the retort after the spirits, volatile salt, and oil, have been extracted from hartshorn. Lamp black is generally prepared at the turpentine manufactories, by burning the dregs after the refining of pitch or other resinous matter, in furnaces constructed for the purpose.

Blue.—This colour, for the use of painters, is variously prepared; the best is ultramarine, which is prepared from lapis lazuli, finely pulverized by ignition, quenched in a strong acid, and subsequently levigated.

Yellow.—A colour much employed in landscape scenery, and the prevailing teint in sunlights. Indian yellow is one of the brightest of those employed for water-colours. In the East Indies it is a very common and cheap colour; the natives there use it commonly for colouring their calicoes, which they do without any mordant, so that the colour is washed out again when the cloth is dirty.

King's yellow consists of sulphur joined to arsenick; or it may be prepared by subliming sulphur with arsenick. It is of a very bright yellow, but does not stand very well; and great caution should be used in employing it, as it is a strong poison.

Naples yellow is a very durable and bright pale yellow; it comes from Naples, and is supposed to be prepared from lead and antimony.

Yellow ochre is an earth coloured by oxide of iron. It is a cheap colour, and not very bright; but is valuable on account of its standing well. Roman ochre is a superiour kind of yellow ochre.

Dutch pink is formed of chalk coloured with the juice of French berries, or other vegetables affording a yellow colour. It does not stand, and is chiefly used for common purposes.

Gamboge is a gum brought from the East Indies. It readily dissolves in water, and is of a fine bright yellow. It is used only in water, and is very serviceable. Massicot is an oxide of lead, prepared by calcining white-lead. It is very little used, the colour not being very bright.

Raw Terra Sienna is a native ochrous earth brought from Italy. It is a fine warm colour, and stands well.

Orange lake is the tinging part of anatto precipitated together with well washed alumina. It does not stand.

[illegible] spectacle than [illegible] its vast floods [illegible] The Mis- [illegible] terrible. When [illegible] beneath the gentle [illegible] sunset; or when its [illegible] the silvery effulgence [illegible] course is still mighty— [illegible] think of its fair lonely [illegible] it has witnessed, and we [illegible] surface shadowed by the for- [illegible] it seems to us in all its majes- [illegible] as the giant slumbering from

[illegible] beautiful spring time is over and the [illegible] evening of summer is past, and Au- [illegible] glory is no more; when winter [illegible] desolated nature, then it is that the "terri- [illegible] sippi," assumes all its fearfulness of aspect, [illegible] that we are gazing upon the mighti- [illegible] with but a single exception that flows [illegible] globe. All then is unmingled grandeur— [illegible]—magnificence.

Turn your eye even now, reader, over its troubled surface, and what a spectacle does that mighty mass of volumed water present! The opposite shore is desolate, bleak and cheerless: the naked banks rise steep from the rushing stream mantled with ice—the trees are leafless and drear—at intervals through their bare, weather-beaten trunks you catch a glimpse of an ancient mound upon the smooth prairie, while far away in the blue distance, standing out against the dim eastern horizon, is perceived the long line of white cliffs or the summits of the bluffs, sweeping away from the view. Bloody Island in the midst of the rushing stream stretches out its barren, sandy shores, sad and gloomy as a graveyard! ah! a graveyard and when the associations connected with its dark history are permitted to throng the mind, the appellation is no misnomer. A graveyard!—let it bear the title; whatever our view respecting the scenes it has witnessed, the name is appropriate.

St. Louis Bulletin.

EDUCATION IN OHIO.

Several matters of general importance have been acted upon in the General Assembly the late session, Among others and unquestionably the most important is the *Common School* bill; a bill that was struggling through the Lower House for several days. It finally passed, twenty members voting against it. The bill provides for the establishment of a Common School fund to the amount of $200,000, consisting of the interest on the surplus revenue, on the salt lands, the tax on bank dividends and Insurance companies, and such other funds as the Legislature may from time to time designate. This is for equal and general distribution of which all the counties are to recieve a proportion according to the number of white children in each. Besides this there is provided an annual tax of two mills on the dollar, to be raised in each county, and to be distributed in the county in which it is raised among the different districts according to the number of children in each. The bill *compels instruction* in the common branches of education in the English language in every common school in the State; which schools are to be open to all. The bill establishes permanently the office of the superintendant at $1200. This office will be one of the most important in the State. It controls and supervises the whole Common School interests in the State. The office is to be established at the seat of Government. In fine, the present bill far surpasses the old one in every respect, and promises to be the means of educating our population fairly, thoroughly and impartially.

Columbus Paper

ANECDOTE OF JUDGE PARSONS.

When Judge Parsons was a practising lawyer, he was once employed to plead two cases in court, which were precisely alike, but in one he was engaged for the defendant, in the other for the plaintiff. It happened that both cases were tried the same day. He spoke for half an hour to the first jury, and the case was given to them and they had retired. When he appeared before the second jury he made use of very different arguments from those before employed by him, of which the court took notice, reminding him that he seemed to have changed his tune, and repeated to him what he had said, but a few minutes before.

Mr. Parsons fixed his keen eye upon the judge, and replied—"May it please your honour, I *might* have been *wrong* a half an hour ago, but now I *know I am right.*" He proceeded: and when the juries returned it was found he had gained a verdict in both cases!

Bounty on Wheat.—The Committee on Agriculture, in the Massachusetts House of Representatives have reported a bill granting to every citizen raising fifteen bushels of wheat a bounty of *two dollars,* and *five cents* for every bushel above fifteen. In their report accompanying this bill, they estimate the number of barrels of flour annually imported into, and consumed within that state, at seven hundred thousand, or one barrel to each individual of the population, which at ten dollars per barrel, the lowest average price for the last three years, makes the enormous sum of seven million dollars a year paid to other states by the inhabitants of Massachusetts for the single article of flour. The operation of the law of Maine, giving a bounty for raising wheat the past year, is spoken of as having been most salutary, the amount raised being believed to have been nearly a million of bushels.

TOBACCO.

Dr. Caldwell, of the Transylvania University, says there are but three animals that can abide tobacco, viz: the African rock goat, the most loathsome animal on the earth—the foul tobacco-worm—and the rational creature, MAN!

CAPT. JOHN SMITH.

SKETCH OF THE LIFE OF JOHN SMITH,

THE FATHER OF VIRGINIA.

[By Samuel L. Knapp, Esq.]

It must be a source of pleasure to every American to look back upon the race of men who first emigrated to this country, and laid the foundation of its future greatness. At the close of the sixteenth century and at the commencement of the seventeenth, a spirit of enterprise was abroad in Europe, which promised great advantages to mankind. The English nation, which hitherto had not done much by way of making discoveries, or forming settlements, now began to awake, and to make a struggle to place herself on the same footing with Portugal and Spain. Sir Walter Raleigh and his friend and relative Sir Humphrey Gilbert were commissioned "with viceroy authority," over all the lands they might discover. The enterprise was marked with one disaster after another until their principal ship was lost and with it a learned journalist, Budeius, a Hungarian, and soon after Sir Gilbert himself perished, with all his crew, in a storm. Distressed but not overwhelmed, Sir Walter continued his exertions for discoveries, but with no success. For a while the misfortunes of Sir Walter's expeditions discouraged the most enterprising from attempting the planting of colonies in North America. A few trading vessels came along the coast and explored some parts of it that had not been much known before, but made no settlements. In this state of apathy a champion for colonization arose, who spared no pains in the cause; this was Richard Hackluyt, a prebendary of Westminster. He preached upon the subject with great success; his views were large, and were enforced with argument and eloquence.

In 1606, a corporation was formed for a new effort. Many joined in the scheme from patriotick motives, as we now subscribe for railroads, turnpikes, or canals, not calculating upon exorbitant profits, but wishing to do something for publick good. To carry their intention into effect, a vessel of only one hundred tuns, and two small barques, were taken up; Captain Newport was commander, and Mr. Percy, a brother of the Earl of Northumberland, was in the enterprise, but the soul of it was Captain John Smith He has justly been called the father of Virginia, and what state would not be proud of such a founder? He had in his elements the "hardihood of antiquity," the lofty daring of the enamoured crusader, and the science of the thorough-bred tactician of modern days, and all united to that amenity of manners which charms every where, and every one, and in every age, in polished or in savage life. When he embarked in the cause of Virginia he was still in the prime of life, under thirty years of age, and yet his fame had reached the ears of all Europe. His life had been one continued blaze of chivalry. He received a good early classical education; but his parents dying when he was only thirteen years of age, he was left to himself. He studied the art of war by himself, and visited France and Spain as a chevalier of honour, and a soldier of fortune; at length he found himself in the Hungarian army which was at war with the Turks, and was besieging the city of Regall. The besiegers were thought slow by the besieged. The ladies of Regall prepared to have some amusement, such as the dames of Damascus and Tunis had seen in the days of the crusades. Turkish pride took fire. The Christian army was challenged to produce a champion for a single combat, "head for head." The challenge was accepted. The Hungarian chiefs cast lots for the honour of meeting the Turk. Fate, probably, a little disciplined by management, gave the honour to the English soldier of fortune. His prowess was known. The army had seen him couch his lance, and bare his blade, and their hopes beat high for his success. The warriours met; all due courtesies were strictly observed on both sides. The combat ensued—the Christian triumphed. The head of the Turk was severed from his body, and knotted to the mane of the horse which had born the conquerer. A friend of the deceased challenged the first day's conqueror; he had this right by the laws of honour. The head of another chieftain was the prize to the valour of the Christian knight. The challenge was now made by the victor, and he was a third time equally successful. The ages of chivalry had not then gone for ever; for on his return to England, youth, beauty, taste, fashion, wealth and rank clustered around him, to see one who had rivalled the best days of martial glory. He was modest, bland, and unmoved at all his honours. His whole heart was occupied by the love of glory; no other love was there; its pulses beat with generosity, gratitude, friendship, and patriotism, but with nothing of a softer nature.

Smith's mind was full of activity and enterprise, for he had no sooner landed on these shores, than he prepared an exploring expedition, in order to give his employers a full account of the country, its soil, bays, harbours, rivers, produce, and all the statisticks which might be gathered; but Wingfield and part of his companions turned their whole attention to searching for gold, which, as Smith foresaw, ended in mortification and poverty. He forewarned them of the effects of their folly, but in vain. From his forecast he saved the colony, and by his fearlessness, good sense, and industry, he collected a greater mass of information respecting the country he with others had come to colonize, than was ever before known.

In one of his tours of survey, he, after performing miracles of valour, was taken by the Indians and carried to Powhatan, the highest sachem of the country. He was sentenced to die. His head was laid on the block of stone, and the clubs were uplifted to beat him to death, when female tenderness came to his succour. Pocahontas, the daughter of Powhatan, rushed between the executioners and their victim, and covered his head with her own.* Poetry, painting, and sculpture, have tried to give immortality to this event: but they have added nothing to the moral beauty of the scene—that is inherent in the story; no meager terms can diminish its interest; no swell of language increase its lustre; even the cold chronologist stops to say something affecting upon it, and the annalist grows eloquent as he puts it upon his record. Smith was not only saved, but in two days afterward restored to liberty, to undertake new enterprises. The next year Smith made his voyage towards the source of the Chesapeake. He sailed

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* By referring to the last volume of the Family Magazine, the reader will find this scene beautifully illustrated.

open boat three thousand miles. This was a
greater feat than the Argonautick expedition.
Indians, full of sagacity, soon saw that he was
naster spirit of the colony, and they feared and
cted him more than all the rest of the white

was not until 1609 that Virginia, under a new
er, began to flourish; but still the colony had
difficulties to encounter. Powhatan had, from
nprudence of some of the white men, determi-
at one blow, to extirpate the whole race. The
n girl who was the preserver of Smith was now
utelary angel of the whole body of the whites.
pprized the colonists of the intended massacre;
n, after her father had retired to sleep, nine or
niles through the woods, and returned without
ng his suspicion. Her sagacity was equal to
indness, for she refused the valuable presents of-
her for the services she had rendered, for they
have led to the suspicion of her having made
ommunication. The next year Smith having
ned to England, his parental care and sage ad-
were wanting, and the whole colony came near
ng. Their distress was so great, they had
arrangements to leave the soil forever: but
happily prevented by timely succours from
nd. In 1613, the Indian princess Pocahontas
ed Mr. Rolfe, and embarked for England.
net with a cordial reception there. Smith sent
norial to the queen, detailing all the great ser-
she had rendered him and the infant colony.
s a most eloquent appeal to her sense of justice
d one so great and good. Pocahontas did
ve long to enjoy the favours of the court, or the
ty of her husband, for she died as she was
to embark for Virginia, leaving one child, from
has descended several respectable and intellec-
amilies. Smith was the soul of truth and hon-
and in this memorial, he ventured to assert,
enius, virtue, and philanthropy, were not con-
to civilized man, but were to be found every
e, and in every age; that affectionate hearts
beat in bosoms of every hue, whether the pos-
r roamed the forest or clustered in the city.
eulogy made by Smith upon Pocahontas to the
, should be preserved among those beautiful
itions of gratitude and affection which make
e gems of history, and attract the attention of
ssive generations.

w England is much indebted to John Smith,
e gave the first accurate account of that terri-
In 1614 he examined the coast and made a
of it. His keen eye saw every thing and he
ibed it with great simplicity. He changed
of the old names, such as Cape Cod to Cape
s, and gave names to places that had not been
red with names previously. Some of his new
s have since been altered, and many of the
sumed. Smith had published his voyages to
nia in 1608, and old Purchas had put some of
narvellous adventures in Europe and Asia, into
ollection. Smith made a second voyage to
England in 1615, and gave a description of the
ry in 1617. The "Trials of New England,"
published several years after these works we
mentioned. No historian, since his day, who
written upon Virginia or New England, knew
so much of the natural advantages of these countries, and their capabilities of supporting a vigorous population as he did.

Exhausted by incessant exertions and incredible labours, this soldier, mariner, admiral, governor, this magician over hearts, this elegant author, this patriot, returned to the land of his birth, and there, in 1631, breathed his last, not having at the time of his death one acre of land in the new world, to which he had been a greater benefactor than any other mortal who had then coasted its shores, or trod upon its soil. With the spirit of just calculation he foretold the glories which were fast coming upon this country. All the visions of our growth crowded upon his soul. England has given him no monument, but America ows him a pyramid.

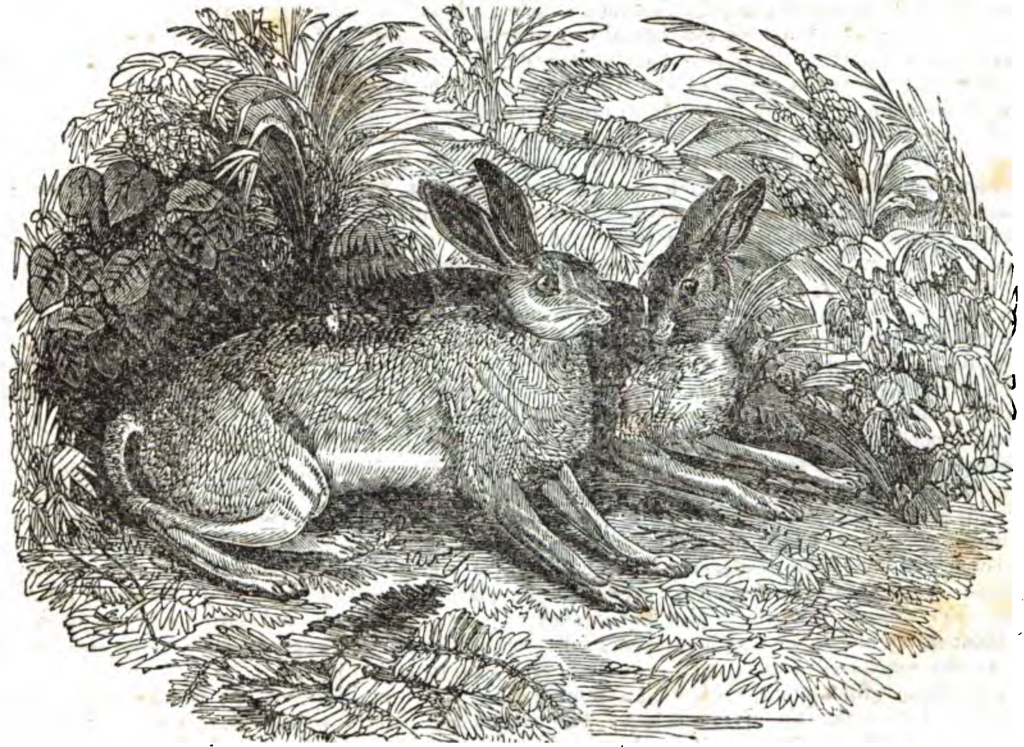
NATURAL HISTORY.

THE HARE.

The hare is a genus of rodent or gnawing mammalia. One of the most remarkable, the most natural, and the most numerous, and to man the most interesting of the whole class. The animals of this genus are distributed, in one species or other, over most countries on the face of the earth; and though New Holland forms a total, and South America a partial exception, hares properly so called, or the allied subgenera, which agree well with them in their main characters, are found almost everywhere: in the warm countries, on the margins of the deserts, on the sandy downs by the sea shores, in the cornfields, in the upland wilds, and on the tops of the mountains, to the very verge of the never-thawing snow. In longitude they extend round the whole circle of the earth, and their range in latitude is at least from the Cape of Good Hope to the borders of the Polar ice.

Nor are the principal species held in less estimation as human food. In the British islands, the hare is now almost the only four-footed animal, the chase of which in wild nature is anything else than mere sport; and then of those species which live more in society than the common hare, and approach more nearly to a state of domestication, the numbers in favourable situations are so great, that large profits are made by the sale of them. This is especially the case with the rabbit. The warrens where those animals are encouraged, in general occupy situations which are not very fit for any other useful purpose; and the animals breed so fast that a supply or produce, equal to several times the number of the necessary stock, may be brought to market every year; and their successive breeding is so rapid under favourable circumstances, that rabbits are scarcely ever out of season, if the stock is properly managed; for as soon as one generation ceases to be fit for the market another is ready to come in. Some of the sandy islands in the bays and estuaries of this country are so perfectly crowded with rabbits that the inhabitants scarcely eat anything else; and they might make the same reply which the Shetland boy made to the third inquiry of the traveller respecting the cole-fish or "piltocks," which are the principal

[Conies.]



[Hares.—*Lepus Syriacus.*]

food of the labouring class in many of those northern islands. "Piltocks," was the answer to what was got for breakfast and for dinner; and when the question was put as to supper, the reply was, "What *could* I get but piltocks?" Just so might the people of some of the sandy islands reply with regard to rabbits, more especially the people of some of the islets in the Bristol Channel.

The characters of this interesting and extensive genus are, four incisive teeth in the upper jaw, and only two in the under; six grinders in each side of the upper jaw, and only five in each side of the under. Those grinders are without proper roots, but have bony tubercles upon the surface, broader across the jaw than in the direction of it. The anterior one is a little smaller than those which immediately follow it; and the posterior one is still smaller. All these grinders, except the last one, have their crowns divided into two parts by a transverse furrow, but the last one presents only a few irregularities in the sides. The grinders in the lower jaw have their crowns divided in the same manner as those in the upper; but they differ from these in having the length along the jaws nearly equal to the breadth across it. By this conformation of the grinders the animals are enabled to masticate bark, twigs and other very hard substances; because the grinders apply against each other in such a manner that every one bears upon two, which offers a much stronger resistance than if the action were that of tooth against tooth. The incisive teeth are long and large, and flattened on their external surfaces. Of the four in the upper jaw the two middle or principal ones are long, strong, and divided throughout their length by a deep furrow, the portions on each side of which are rounded externally; so that the cutting extremity of the tooth has something the form of a double gouge. Of those prominences the lateral or external one on each tooth is the broadest and strongest; and thus this apparatus combines the very maximum of mechanical skill and strength in proportion to the quantity of materials. The two shorter incisive teeth, which are external of these, serve chiefly to support them, which they do much more effectually than if they were of the same length. They are rounded in their section, and stand rather broad upon the jaw, by which means they still farther support the two middle ones. The middle ones have an oblique basil on their posterior faces, which brings them up to a chisel-edge on their anterior ones; and while the body of the tooth is composed of bone which is tough and fibrous, though comparatively soft, the plate of enamel on the anterior or cutting edge is exceedingly hard. This is by no means an uncommon structure of tooth among rodent or gnawing animals; and no structure can be better adapted for their purposes. This tooth wears at the top by the hard substances which the animals divide, and are compelled to divide, especially in the winter months, when there is no longer any green food for them. But though it wears, it has no tendency to get blunted, as the supporting bone wears fully as fast as the supported cutting edge; and as such teeth continue growing at the roots, they remain fit for action during the life of the owner. The two teeth in the under jaw have cutting edges, and are supported by bone nearly in the same manner as those in the upper.

The bodies of these animals are as peculiar and characteristick as the forms of their teeth. The fore legs are slender, and in all the species much shorter than the hind legs. The fore legs have five toes armed with claws, which are strong and rather crooked. The third toe is the longest in the foot, and the fifth, or that which answers to the thumb, is short, placed on the metacarpal bones, and does not touch the ground in walking. The hind feet have only four toes each. All the toes, and even the soles of the feet, are covered with hair similar to that on the rest of the body; and this character has been considered as a distinguishing one from the earliest periods of natural history, and on account of it the genus has sometimes been called *Dasypoda*, or hairy foot. The tail, which is generally thickly beset with soft hair, is always short, and in some of the species is entirely wanting.

The ears form a distinguished natural character in these animals; they are usually very long, and capable of much more motion than the ears of most other animals. In the natural state their common attitude is erect; but in some of the domesticated varieties (for the domesticated ones are very much broken into varieties) they are pendulous. In general the ears are naked, or very thinly covered with short hairs; and the membranes of which they are composed are so thin, that they are transparent or nearly so, at least a strong light shines through them. The upper lip is entirely slit or divided on the mesial line; and this is so marked a character, that the common name given to a divided lip is a hare-lip. The external part of the mouth is partially covered with hair. The eyes are large, stand far out from the head, are placed laterally, and capable of commanding nearly the whole horizon; that is, seeing behind the animals as well as before without turning the head. The nostrils are straight; and in the upper part there is a transverse membrane which can occasionally be brought down, so as nearly to close the orifice.

The females have a variable number of mammæ, in the different species or rather subgenera. The greatest number is ten, and the least number is six; and whatever the number is, there are always four pectoral, or on the breast, and the remainder abdominal or on the belly. In the hares and rabbits, which may be considered as the typical species, or the true hares, the number is always ten; and though it does not hold universally that the number of young increases with the number of mammæ, yet it is natural to suppose that the general tendency is that way.

We have already mentioned that these animals are exceedingly prolific; and the females of them are among the few in which the singular process of *superfœtation* takes place; that is, a new conception happens after the young one, already in the matrix, is considerably advanced. But though this does take place, all the animals of this genus are true placental mammalia, and have not in the system of reproduction, any approximation to the structure of the marsupial animals.

There is, however, one circumstance here which is not a little wonderful, and which shows that we are to seek the characters of animals in the whole animal and not in any individual part; that, in short, independently of the matter of which the body is composed, and the organs and the form into which that matter is moulded, there is something, even anterior to this matter and this form, which collects the one and fashions the other. The animals of this genus make a nearer approach, in their general form, their gait when walking, and their mode of life, to the rodent marsupial animals, that is to the kangaroos, especially the smaller ones, than is made by any other race, indeed than is made by any two races in the whole class of mammalia, the one of which is strictly placental, and the other marsupial. And in the kangaroos this tendency to superfœtation is far stronger and more common than in the genus *Lepus*. So strong is it indeed that, when they are in free nature, there is perhaps no instance of a female kangaroo which has not two or more succcessions of young ones bringing forward at the same time.

HARES PROPERLY SO CALLED. Besides the common characters of the genus, as already described, the hares properly so called, have certain characters of their own. One of these is colour, which, in a state of nature, is always grayish-brown, except in some of the Alpine species, and their colours appear to be climatal and seasonal. Another coloured mark, which distinguishes them in a state of nature, is a spot over or around the eye. In many this spot is white, in all it is lighter coloured than the surrounding parts, and it is never wanting. The tail is also invariably white on the under side, and generally blackish on the upper, except in the American rabbit, in which it is reddish. With the exception of the sides of the neck, the upper part, including the outsides of all the legs, is generally of the same colour as the back; the under part is white in almost all the species, and the tips of the ears are black; the body, the upper part especially, is covered with two sorts of hair, the one long and silky, and rather strong in the staple, the other shorter, more woolly, and much finer, and therefore extensively used in the manufacture of hats, in which it is frequently employed as a substitute for the fine woolly hair of the beaver, to which, however, it is greatly inferiour, both in strength, and in retaining the colour given to it by dyeing. The hair of the rabbits is still greatly inferiour to that of the typical hares in this respect, but it is also used, though hats made of rabbits' felt are of exceedingly little value.

The other remarkable character of the true hares which we shall mention is their extreme productiveness. They are capable of breeding during the first year; the females go only thirty days with young: the broods are often numerous; and the young are born completely covered with fur, with their eyes open, and are very soon in a condition for finding their own food. Many of the species dig burrows in the ground to a greater or less depth; and those who do not, are in the habit of selecting for themselves particular seats or "forms," upon which they rest, not only during a portion of the night, but during the greater part of the day. The morning and the evening are their principal feeding-times; and while the sun is bright they are but rarely seen, though, in gloomy days, and especially after a shower, they do come abroad, though the young do this more frequently than the old ones. On their forms they sit very close; and as these are generally chosen upon dry knolls, or other places where there is withered vegetation, one may pass so near them as almost to tread on them without their rising. This is not only the case when there is no danger abroad, for there have been instances in which those who were following the grayhounds, in coursing, have picked up a live hare within a yard or two of where the dogs had passed not a minute before.

The hare is rarely found in very hilly or mountainous situations; neither is it often found in places much exposed to the wind, especially when it blows from the north or south; its favourite residence being in rich and somewhat dry and flat grounds. The hare-finders and shepherds remark, that the hares on the downs have a variety of seats, which they shift from time to time, as the weather directs, generally ascending to the more elevated grounds when rain prevails. Their food consists of various vegetables, but they seem to prefer those of a milky succulent quality, and to be very partial to pinks, carnations, parsley, birch, and laburnum. They will prey on the bark of almost every tree during the winter, and they are often very injurious to young plantations. Their cry, which has been compared to that of an infant, is seldom heard, except in cases of distress or surprise. They are taken in some countries by a call imitative of that between the male and female.

The hare is naturally of a gentle disposition, although not very susceptible of strong attachment, and when taken young may be tamed with very little difficulty. Shy and timid as it undoubtedly is in its native haunts, yet, when domesticated, it often assumes a forward and even a petulant demeanour. In respect of disposition, however, a very marked diversity probably obtains among different individuals, as has been finely exemplified by Cowper the poet, in his account of three which he watched himself.

As an article of food the flesh of the hare has been in high esteem from very remote antiquity; and notwithstanding the additions which modern luxury has made to the furnishings of the table, it still maintains its character. In the opinion of Martial the epigrammatick poet, the flesh of the hare was superiour to that of every other four-footed animal; and Horace represents the hare's "wing" as being among the most highly prized of Roman luxuries. In those countries of middle and southern Europe which are but thinly peopled and partially cultivated, as compared with the British islands, the number of hares which are taken in the course of the year is immense; and the skins of them form an extensive branch of commerce, being exported for the hat manufacturer, and also used locally as very warm articles of clothing. It is understood that the small kingdom of Bohemia alone furnishes nearly half a million of skins in the course of the year, and that Austria Proper furnishes nearly double that number; while the supply from southern Russia and western Siberia is understood to be still greater.

Though the hare is considered as one of the most harmless and timid of all animals, excepting in so far as it commits depredations upon the vegetable kingdom, it has not escaped being made an object of superstitious dread; neither is it quite exempted from those foolish, and perhaps instinctive, prejudices which certain individuals of the human race have against certain animals which cannot in the nature of things do them any harm. It is reported of a celebrated French commander, who was an exceedingly brave man, that he always fainted at the sight of a hare. In England, when the belief in witchcraft was general, the hare was regarded as one of the most formidable animals—the one, in short, into which old women most frequently transformed themselves, by the instrumentality of the devil, in order to wreak their vengeance on the rest of mankind. Nor has this prejudice been entirely exploded, for there are still many of the fishing villages where a hare's foot cannot be mentioned without exciting the greatest terrour—where a hare thrown into a boat would prevent that boat from going to sea; and where, if such a catastrophe were to happen as a hare to run along the beach in front of all the fishermen's huts, it would shut them up as effectually during the day as if each were guarded by a regiment of soldiers.

[*a* Triticum sativum.] [*b* Holcus sorghum.]

WHEAT.

M. de Lamarck is of opinion that several kinds of wheat, which are generally looked upon by botanists as distinct species, are all of them only varieties of the *Triticum hibernum*—Lammas or winter wheat. And when we consider the varieties that arise from cultivation, and that the originals cannot be found in a state of nature, this opinion seems to be founded upon reason and analogy. Nothing certain about the original country of the wheat is known; Sicily, Siberia, and Persia, have been in their turn pointed out as claimants, but without any unequivocal evidence. If we were to suggest Egypt as the birthplace of the wheat, we should not perhaps be far from the truth; since the first time we hear of it, in the most ancient of all histories, is in Egypt, from whence the cultivated wheat might have extended to the islands of the Mediterranean, and subsequently to Greece, and her colonies to the westward.

Egyptian Wheat.—The following paragraph, showing the very curious method in which this wheat was introduced into the Wisconsin Territory, is taken from the Chicago American.

"We have received a specimen of Egyptian wheat, raised last season on Rock river. The seed was taken, by our informant, from the craw of a bird of passage, and this is the second season in which he has cultivated it. Four or five seeds were all that he put into the ground the first season, and last year he had a garden-spot full of it. It has three pronged stems, and is a beautiful and superiour production.

THE SKIES.—Bryant.

Ay, gloriously thou standest there,
  Beautiful, boundless firmament!
That, swelling wide o'er earth and air,
  And round the horizon bent,
With that bright vault and sapphire wall,
Dost overhang and circle all.

Far, far below thee, tall gray trees
  Arise, and piles built up of old,
And hills, whose ancient summits freeze
  In the fierce light and cold.
The eagle soars its utmost height;
Yet far thou stretchest o'er his flight.

Thou hast thy frowns: with thee, on high,
  The storm has made his airy seat;
Beyond the soft blue curtain lie
  His stores of hail and sleet:
Thence the consuming lightnings break;
There the strong hurricanes awake.

Yet art thou prodigal of smiles—
  Smiles sweeter than thy frowns are stern:
Earth sends, from all her thousand isles,
  A song at their return;
The glory that comes down from thee
Bathes in deep joy the land and sea.

The sun, the gorgeous sun, is thine,
  The pomp that brings and shuts the day,
The clouds that round him change and shine,
  The airs that fan his way.
Thence look the thoughtful stars, and there
The meek moon walks the silent air.

The sunny Italy may boast
  The beauteous teints that flush her skies,
And lovely, round the Grecian coast,
  May thy blue pillars rise:—
I only know how fair they stand
About my own beloved land.

And they are fair: a charm is theirs
  That earth—the proud, green earth—has not,
With all the hues, and forms, and airs,
  That haunt her sweetest spot.
We gaze upon thy calm, pure sphere,
And read of heaven's eternal year.

Oh! when, amid the throng of men,
  The heart grows sick of hollow mirth,
How willingly we turn us, then,
  Away from this cold earth,
And look into thy azure breast,
For seats of innocence and rest!

THE SCIENCE OF GEOLOGY.

[From the Glasgow Treatises, with additions.]

DILUVIUM.

Those superficial beds of gravel, clay and sand, which we find on the surface of the upper strata, have been termed, by some geologists, diluvium, or diluvial detritus. The beds are not usually stratified, and they contain immense numbers of rolled and rounded stones, many of them of great size and weight. It is obvious that these stones do not belong to the subjacent strata, for they differ from it in composition and structure; and indeed, comprehend specimens from almost all kinds of rocks, stratified and unstratified. We may often pick out of the soil, in one field, within a space of a few yards, twenty or thirty different specimens, including trap-rocks, granites of various kinds, mica-slate, sandstone, ironstone, and many others. The question then is, How came they there? It is obvious that they have been transported by currents, for the edges have been rubbed off, and the whole mass rounded, just as we would expect to find stones and gravel, which had been for a long time subject to the action of running water. Several geologists have ascribed them to the deluge; but this is a very unsatisfactory theory, for the waters of the deluge were too short a time upon the earth to produce such extensive effects. Water has apparently been instrumental in transporting and accumulating the materials. But their deposition in the situations where we find them, has probably been the work of various successive periods; and other causes must also be referred to, in order to account for this singular phenomenon. It is just another of those phenomena, as to which geologists are not in possession of sufficient facts to enable them to form a definite or satisfactory theory.

Alluvial soil has sometimes been confounded with diluvium; but, properly speaking, the term alluvium belongs to a more recent formation. The matter carried down by rains and floods, and which we see deposited every day in lakes or estuaries, or added to the banks of rivers, is alluvium.

Such are a few of the more interesting formations.

ERRATICK BLOCKS.

By this term are denominated those blocks of solid rock, some of them of enormous size, and seldom rounded, which are scattered over the plains in many countries, and also elevated on the sides of mountains. On the eastern side of Jura, for example, where that chain of mountains is separated from the Alps by the long and broad valley of the Aar, we find large blocks of granite, often thirty feet in length, and twenty in thickness, lying at an elevation of more than fifteen hundred feet above the valley. That these blocks came from the opposite Alps is extremely probable, for the mountains of the Jura are not granitick, but calcareous. How they came there it is very difficult to say. Some have supposed that they had rolled down from the Alps, previous to the elevation of the Jura mountains, and had been carried up along with the strata of which the latter are composed. M. De Luc thought, on the other hand, that they had been elevated into the air by the convulsion which elevated the Alpine range, and in their descent had fallen on the opposite mountains. A third set of theorists contend that they have been transported on rafts of ice during some immense flood.

Similar blocks of granite have also been found in Iceland, which is itself entirely formed of lava. These, apparently, must have come from Scandinavia. In the north of Germany, erratick blocks of limestone are found, containing fossils of a kind which do not occur in that locality; and hence these also must have been transported from Scandinavia, across the Baltick. In the same way granitick blocks are found in Lamlash, possessing the peculiar characteristicks of the granite in the neighbouring island of Arran.

These erratick masses abound in most northern countries, and when traced to their parent rocks, are generally proved to have been transported in a southerly direction, both in Europe and America. Blocks and boulders from the rocks west of Lake Champlain, are scattered over the high grounds in the central and southern parts of New York, and similar observations have been made in New England and the western states. The direction of transfer in these cases being found to correspond generally with the direction of the polar currents of the ocean, it has been inferred that many of these masses have been transported in fields of ice or floating icebergs, at a period when the fossiliferous rocks of this country were beneath the ocean, in the same manner that blocks, boulders, and diluvium are brought to the banks of Newfoundland in the ice, at the present day.

FOSSIL REMAINS.

Before proceeding to consider the causes which are at present operating changes on the earth's surface, it may be proper to notice briefly the very interesting and extraordinary fossil remains of animals and plants, which are found imbedded in the stratified rocks. No department of geology is so attractive as this. It carries us back to ages far remote. It introduces us to islands and continents subsequently buried for ages beneath the ocean; and it brings vividly before us races of animals and plants long extinct, many of them of the most singular conformations, and of gigantick proportions. "When we see," says Dr. Buckland, "the body of an ichthyosaurus, still containing the food it had eaten just before its death, and its ribs still surrounding the remains of fishes that were swallowed ten thousand, or more than ten times ten thousand years ago; all these vast intervals seem annihilated; time altogether disappears; and we are almost brought into as immediate contact with events of immeasurably distant periods, as with the affairs of yesterday."

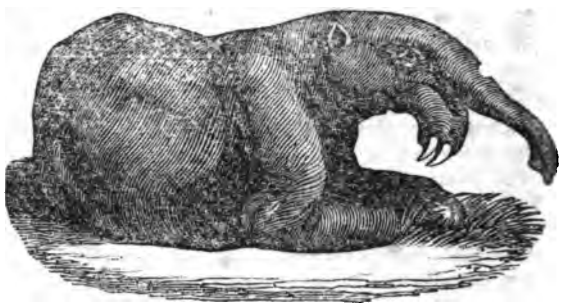
As we distinguish great epochs of change in the arrangement of strata, so we find corresponding changes in the species, and even in the genera, imbedded in them. The shells of the ancient strata, for example, have forms peculiar to themselves. Then these gradually disappear, till they are not seen at all in the recent rocks, still less in the existing seas; in which, indeed, we never discover their corresponding species, and of some of them not even the genera. On the contrary, the shells of the rent era resemble, as respects the genus, those iich still exist in the sea; and in the last formed 1 loosest strata, there occur species identical with ›se which at present inhabit the ocean.* The ne holds in regard to other animals. In the tranion rocks, we find fishes, sponges, &c., but no adrupeds. In the secondary formations, along th fishes, zoophytes, and crustacea, we find various iparous quadrupeds. Such are the crocodiles of ›nfleur, and of England, and the monitors of Thugia. We also find various species of iguanodons lizards, pterodactyles, tortoises, and other reptiles, d also insects. The birds and land-quadrupeds not appear till long afterward, being first found the tertiary strata, which, as we have already had casion to remark, are the most rich in organick nains. In this series we find quails, owls, buzrds, and other birds; tortoises and crocodiles, bats, iirrels, opossums, the anaplotherium, palæothem, and other curious extinct animals; with vaus moluscans, and mammiferous marine animals. ie remains of carnivorous and ruminating animals, d of pachydermata, are particularly abundant. ost of these are extinct, being entirely different m all existing species. The plants of the differt epochs are equally curious as the animals.

It is chiefly owing to the investigations of the eat Cuvier, that geology is indebted for the knowlge of fossil remains. By a scientifick, but beautily simple process, he was enabled, from the inection of almost a single bone, to reconstruct the tire animal. After stating the necessary peculiares of the different parts of the body of carnivous animals, M. Cuvier thus concludes his interestg deductions:—"In short, the shape and strucre of the teeth regulate the forms of the condyle, the shoulder-blade, and of the claws, in the same inner as the equation of a curve regulates all its ier proportions. And as in regard to any particu curve, all its properties may be ascertained by suming each separate property as the foundation a particular equation, in the same manner a claw, shoulder-blade, or condyle, a leg, or arm-bone, or y other bone, separately considered, enables us to scover the description of teeth to which they have longed; and so also reciprocally we may deterne the forms of the other bones from the teeth. ius commencing our investigation by a careful rvey of any one bone by itself, a person who is fficiently master of the laws of organick strucre may, as it were, reconstruct the whole animal which that bone belonged."†

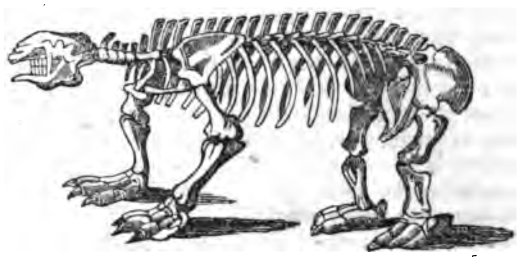
We shall now describe very shortly a few of the ›re remarkable of the extinct animals, though ined selection is difficult, where all is interesting.

THE DINOTHERIUM.

This extraordinary animal is the largest of all the restrial mammalia yet discovered; being of the ormous length of eighteen feet. It was a herbivous animal, holding an intermediate place between tapir and the mastodon, and inhabited fresh-wa lakes and rivers, feeding on herbs, and aquatick roots, and vegetables. Its lower jaws measure four feet in length, and are terminated at the extremity by two large tusks curving downward, like those of the upper jaw of the walrus, by which it seems to have hooked itself to the bank as it slept in the water. The remains of the dinotherium are found in tertiary limestone formations.

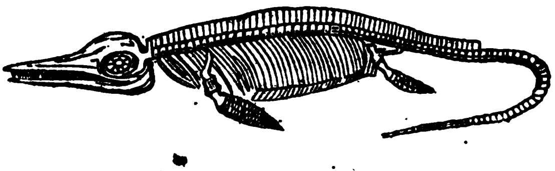


[The Dinotherium restored.]



[The Megatherium.]

This monster belonged to the sloth species, but it exceeds the largest rhinoceros in bulk. It seems to have had a bony coat of armour for its hide, similar to that of the armadillo, and about an inch in thickness. Its haunches were more than five feet wide, and its body was twelve feet long, and eight feet high. Its feet were enormous, being a yard in length, and more than twelve inches wide, and terminated by gigantick claws; while its tail, which probably served as a means of defence, was larger than that of any other beast among mammalia, whether living or extinct. From the appearance of the anteriour part of the muzzle, it must have had a short trunk or snout like the tapir, for gathering up the roots, which it dug from the ground, or from the bottoms of rivers, with its powerful feet and claws. The remains from which Cuvier derived a knowledge of these facts, were discovered in alluvial soil in the sandy plains of the Pampas of Buenos Ayres. They are found along with fossil remains of the mastodon.



[The Ichthyosaurus.]

This name literally means *fish-lizard*. The ichthyosaurus belongs to the family of saurians, but with the vertebræ of a fish it partakes partly of the character of the crocodile, and is otherwise of a description of which existing reptiles of the lizard-kind can afford us no idea. It resembled the modern porpoise, but had four broad feet or paddles, like those of the whale, and was terminated behind by a long and powerful tail. Some of the largest of these animals must have been upward of thirty feet in length. One of their most extraordinary features is the eye, which in diameter is found as large as fourteen inches, and must have possessed great powers of vision. The expansion of their jaws too must have been very great, the length sometimes exceeding six feet. The ichthyosaurus was an aquatick carnivorous animal, but breathing air. Its remains have been found containing the scales, bones, and teeth of various fishes, and even fragments of the bones of small ichthyosauri; so that those monsters of the ancient world devoured even their own young.* It is found in the secondary series of geological formations.

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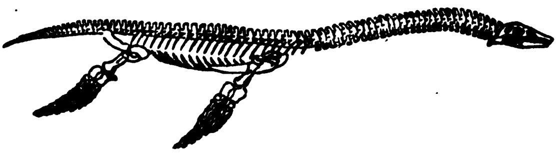
* Cuvier—Theory of the Earth, p. 13.

† Theory of the Earth, p. 94.



THE PLESIOSAURUS.

The characters of this animal have been described by Cuvier, as altogether the most numerous that have yet been found amid the ruins of a former world. It had the head of a lizard, the teeth of a crocodile, a trunk and tail of the proportions of an ordinary quadruped, the ribs of a chameleon, the fins or paddles of a whale, while the neck was of enormous length, resembling a serpent attached to the body. This neck it probably darted suddenly upward, and caught birds or insects which happened to come within its reach, and it may also have used it for catching fish in the water below it. It was evidently an aquatick animal. It is found in the same strata as the ichthyosaurus.

THE PTERODACTYLE.

This very curious and anomalous reptile possesses a head and neck resembling that of a bird, wings like those of a bat, and the body of a lizard. It is neither a bird nor a bat, however, but belongs to an extinct genus of the order of saurians, which by a peculiarity of structure were enabled to fly in the air. Eight species of these animals have been discovered, varying from the size of a snipe to that of a cormorant, and in external form resembling our bats. Besides the power of flying, they were enabled to swim like other amphibious lizards, and in all likelihood they fed not only on insects but on fishes.

THE IGUANODON.

This animal is of a more gigantick race than any other of the lizard tribe, some of them having attained the enormous dimensions of seventy feet in length, measuring from the snout to the extremity of the tail, and of fourteen feet round the body. The most credulous would be apt to reject the account of such a monster, as beyond even the privileged limits of fable, were not the evidences of its existence, derived from its fossil remains, of a character so clear and unequivocal. It appears to have lived upon vegetables, and is found in what is called the Wealden formation, in the secondary rocks of the south of England. The largest of the living iguanodons scarcely ever exceed five feet in length.

[The Iguanodon.]

Besides these amphibious and land animals, there are remains found of many curious saurian fishes, some of them attaining a great size, and of a description altogether different from any existing genus.

THE MAMMOTH.

This animal, though extinct, belongs to a period much more recent than any which we have mentioned. It is of the elephant kind, and its remains are found in England, Scotland, and other countries; but nowhere are they so abundant as in Siberia, where the tusks form an article of commerce by the natives. The entire carcase of a mammoth was not long ago discovered imbedded in the ice, where it must have remained for ages. So complete was the state of preservation in which it was found, (owing to the coldness of the climate,) that the flesh was eaten by dogs. The bones of several species of the rhinoceros are found along with those of the mammoth.

THE MASTODON.

This is a brute much larger than the mammoth, but resembles it in its habits, and belongs to the same epoch. The mastodon is interesting, not only on account of the magnitude of some of the species, but also because it was from it that naturalists were first convinced that there have been genera and species of animals which no longer exist. Cuvier distinguished six species of this animal. In America the bones of the gigantick mastodon are chiefly found in the vicinity of saline springs, with the remains of stags and buffaloes. It was an herbivorous animal, living on grasses and leaves.

FOSSIL BIRDS.

The remains of birds are rare in all strata. In the tertiary rocks we find a few species of the woodcock, quail, cormorant, owl, buzzard, and some others; but few in the older deposites. Although the remains, however, are wanting, we have evidence, from the marks of footsteps in sandstone rocks, of the existence of various unknown birds, some of which must have been of gigantick proportions. The most interesting of those yet discovered occur in the new red sandstone, in the valley of the Connecticut, among which are the footsteps of a bird twice as large as the ostrich. The marks have been caused by a foot consisting of three broad and thick toes, and measuring no less than fifteen inches, or seventeen including the claws; and are apparently those of a bird resembling in character the modern *grallæ* or waders. The footsteps appear in regular succession, in the continuous track of an animal in the act of walking or running, and occur at intervals, varying from four to six feet. This immense length of step is greater in proportion than that of any existing species of birds; and taking the marks at the minimum of four feet asunder, they probably indicate a leg of at least six feet long. If to this we add the body, neck, and head, we have a bird, which could not have been less than twelve feet high, and perhaps more. The African ostrich attains the height of nine feet, while its leg is only four feet long, and the foot only ten inches. Few traces of any bones but those of fishes, have been found in the rocks containing the footsteps in question; but many tracks of different individuals, and also of different species are found crossing each other. On every track the length of step increases with the size of the foot.* They are called by geologists *Ornithicnites.*

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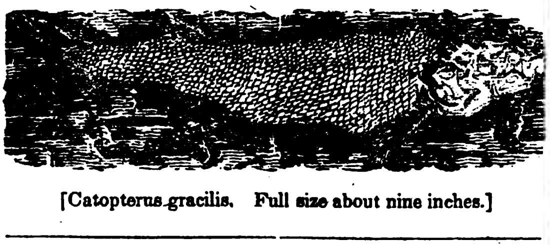
* Roget, p. [illegible].

FOSSIL FISHES.

The remains of fishes are found in all the strata from the lowest secondary to the latest tertiary rocks. In some formations the skeleton alone is found, in others the exterior scaly covering is beautifully preserved, while no traces of the bones are left. Prof. Agassiz of Neufchâtel, was the first to notice the curious fact, that the fossil fishes of the older formation differ remarkably in their organization from existing species, and even from those found in more recent formations. This difference mainly consists in the prolongation of the vertebræ into the upper lobe of the tail which is always more or less forked. As we proceed from the lower strata upward, this peculiarity gradually disappears, and in the upper secondary and the tertiary rocks it is entirely wanting. In the United States, fossil fishes have been found in the sandstone formation of Connecticut, to which we have already alluded. We give below a reduced figure of the *Catopterus gracilis*, a beautiful species which occurs in that formation.†

The secondary and tertiary strata which border the seacoast from New Jersey southward, often furnish the teeth and scattered vertebræ of sharks, with other marine remains. We learn too that fossil fishes have recently been found in the Virginia coal-basin near Richmond, in a sandstone formation, two hundred feet below the surface.

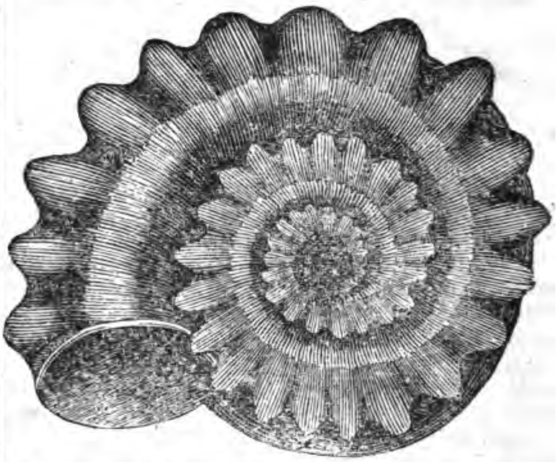


[Catopterus gracilis. Full size about nine inches.]

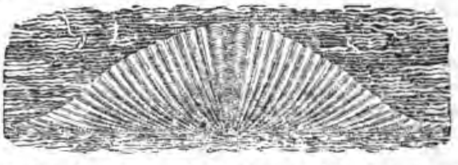
FOSSIL SHELLS.

Shells occur in great abundance and variety in many different strata, some of them very large, and others as much the reverse. So minute are some of the species, that Saldani collected, from less than an ounce and a half of stone, upward of *ten thousand* chambered shells. Of some species, four or five hundred weigh but a single grain.

Extinct chambered shells, analogous to the *Nautilus Pompilius*, occur in the transition and secondary strata, in prodigious numbers, and some of them of great beauty. These shells are termed Ammonites, and when large, are sometimes erroneously taken for petrified snakes. The peculiarity of this shell as well as of the Nautilus, consists in its being divided into chambers by transverse partitions. Through these chambers runs a tube called the *siphunculus*, which the animal can fill with either air or water at its pleasure, and thus by the change of its specifick gravity ascend to the surface or descend to the lowest depths. The figure below is the *Ammonites bellicosus* found by Dr. Hildreth in Ohio.



In the fossiliferous rocks of the transition series, west of the Hudson, there is an extensive stratum which abounds with the shells of a remarkable species of *Productus*. A figure of this shell is here subjoined.



But our limits render it impossible to pursue farther this most interesting subject; although the fossil remains of insects, radiated animals or zoophytes, and others, are all equally curious as those which we have mentioned. The various genera of extinct plants likewise, present a wide and highly interesting field, whether for study or amusement. Among these we find plants of the genus lipidodendron, forty-five feet long, the living analogies of which are weak and creeping plants, not three feet in height; sigillaria (supposed to have been allied to arborescent ferns,) of fifty and sixty feet high; and stigmaria, (an aquatick plant,) of still more enormous dimensions. An exceedingly interesting account of these and other remains of the antidiluvian world, will be found in the Bridgewater treatise of Dr. Buckland, lately published.

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* Professor Hitchcock.

† Annals of the New York Lyceum of Natural History, vol. iv.

Before leaving this subject, we would advert to a very common, but very mistaken notion, entertained by many good people, namely, that previous to the fall of man, animals of all kinds lived together in a state of harmony, no one preying upon or destroying another; in short, that "the wolf dwelt with the lamb, and the leopard lay down with the kid." But nothing is more certain than that races of carnivorous animals have existed from the very earliest geological eras, and that animals fed upon their fellow-animals, thousands of years before man became an inhabitant of the earth. The most superficial study of the structure of the teeth, and other parts of fossil animals, will convince any one of this; and in a very remote series of rocks we even find the remains of the ichthyosaurus, full of the scales and digested bones of the fishes on which it preyed. A thousand other instances of the same kind might be adduced.

CAUSES WHICH OPERATE CHANGES ON THE EARTH'S SURFACE.

No theory in geology is more confirmed by facts than this, that many successive destructions and renovations have taken place on the surface of our globe. People are apt to think that these changes have been sudden, and some of them undoubtedly were so—as, for example, when an entire renewal took place within a space of six days, as recorded by Moses. But in general we are bound to hold, in the absence of evidence to the contrary, that the causes operating now, operated likewise in effecting the revolutions of which we speak; and it will be found that the existing agents are sufficient to account for most, if not all the phenomena, which we meet with in our investigations.

There are two great antagonist powers in nature —the aqueous and the igneous. The former, as in springs, rivers, tides and rain, is constantly employed in the disintegration of rocks, and in the degradation or levelling of land. The latter, by volcanoes and earthquakes, is, on the other hand, employed in restoring the elevation and inequalities of the surface. Were there no such compensating power of elevation, a time would come when the whole materials of the loftiest mountains would be transported to the ocean, and when the whole earth would be reduced to a saline marsh. To these effects there are exceptions, for sometimes the igneous agent appears as an instrument in the depression of land, as where subsidences are caused by earthquakes; and on the other hand, the aqueous is often found exercising a reproductive function, as when land is created by the deposites formed by rivers and tides.

AQUEOUS CAUSES.

It is well known that land elevated above the level of the ocean, attracts a large proportion of those vapours, which the heated atmosphere is continually elevating from the surface of lakes and seas. By this law, all water is first carried to the higher regions, and thence descends again in rills and rivers. These streams are continually wearing away the rocks and soil, and carrying them down to the plains or lakes at their source, in the shape of sand and gravel. A velocity of three inches per second at the bottom of a stream, will tear up fine clay; six inches per second will transport fine sand; twelve inches, fine gravel; and three feet per second, stones as large as an egg. When this rate is increased by floods and torrents, the transporting power is proportionally increased. Sir T. Dick Lander states, that in 1829, on the Nairn, a fragment of stone, fourteen feet long, was carried by that river two hundred yards; and on the Don, a mass of four or five hundred tuns of stones was forced, by the flood, up an inclined plane rising six feet in eight yards.

Besides its solvent power, water is a powerful agent of decay, by its quality of expansion in freezing. The rain penetrates crevices of rocks, and when it freezes, large masses are torn off and separated. The oxygen in the atmosphere also tends to disintegrate rocks. By these causes combined, it is astonishing how rapidly high lands are levelled, and lakes and estuaries filled up by the earth, gravel, trees, &c., which are carried into them. The Mississippi affords a fine illustration of this. The plain through which that river flows, is bounded on the east and west by great ranges of mountains. Below the junction of the Ohio, this plain is from thirty to fifty miles broad, and after that it increases in breadth to upward of one hundred miles. All this is alluvial land, that is, land which in the course of ages has been formed by the *detritus* carried down by the river from the high grounds. The Lake of Geneva is rapidly filling up from the same cause. An ancient town, at the upper end, called Port Vallais, once situated at the water's edge, is now more than a mile and a half inland. The intervening tract, which has been acquired in less than eight centuries, has been formed by the earth and sand carried down by the Rhone. From the northernmost point of the gulf of Trieste, where the Isonzo enters, down to the south of Ravenna, there is a series of accessions of land, of more than one hundred miles in length, which, within the last two thousand years, are known to have increased from two to twenty miles in breadth. The phenomena of the Delta of the Nile are equally striking. Without doubt the whole of Lower Egypt was, at some remote period, a gulf of the sea, which has been filled up and converted into fertile land by the deposites of the river.

Mr. Lyell makes an interesting calculation, of the amount of sediment carried down by the Ganges, from which a faint idea may be formed of the transporting power of rivers. Having ascertained the number of cubick feet of water discharged by the Ganges, per second, he calculates, by the safest data, the proportion of solid matter contained in it; and then states, as the result, that "if a fleet of more than eighty Indiamen, each freighted with about fourteen hundred tuns weight of mud, were to sail down the river every hour of every day and night, for four months continuously, they would only transport from the higher country, to the sea, a mass of solid matter equal to that borne down by the Ganges in one flood season." In this way have been formed, by the *detritus* carried down from the Himalaya mountains, the whole of the fertile plains of Hindostan.

USEFUL ARTS.

PAINTING IN WATER-COLOURS.

This pleasing and useful branch of the fine arts is more generally employed as a vehicle for pictorial effect than any other. It has several important advantages peculiar to itself. It requires but few materials, and a picture may be left in any stage of its progress almost at a moment's notice. It is also better fitted for illustrations in natural history and mechanical science than the more costly processes in oil. But it is in the delineation of landscape scenery that we must look for the highest degrees of excellence in this walk of art.

The natural divisions of landscape consist of sky, earth, and water, the form of which, whether we consider composition, chiaro-scuro, or colouring, demands our prior attention, as its influence by transmitting light, the source of colour, is diffused over and in a great measure rules the whole picture; and the taste of the artist may be rarely better exemplified than in the character of his skies, or more clearly shown than by his management of atmospherical phenomena. If the principal part of a landscape be composed of warm and glowing teints, such as sunshine after a shower, the sky must be serenely coloured to accord with the landscape; but the cloistered abbey, the feudal fortalice, or the towering mountain, introduced into a composition as means best calculated to inspire and convey sublime emotions, should be accompanied by dark gloomy clouds, rolling their dense masses over the scene, and broad masses of shade thrown over the picture. When the general character of the landscape appears deficient in interest, the sky must be grand and imposing, and vice versa. The morning light is a silvery gray; the light of the evening has a golden hue: but neither of them possesses the dazzling effulgence of the sun at noonday.

The sky or atmosphere may be divided into aërial and aqueous.

The aërial is the medium through which light passes to us, and is in colour blue, inclining to purple, gradually becoming less intense by the interposition of terraqueous vapour as it approaches the earth, and frequently assuming a greenish hue at morning or evening, when it becomes absorbed in the splendour of the rising or setting sun.

The aqueous consists of vapour, in a state of constant evaporation from the earth, which is at first invisible, till, becoming partially condensed, it appears to the eye in the ever-varied forms of clouds and mist, and finally returns to the earth in rain or snow.

Sir Isaac Newton attributes the blue colour of the sky to vapours beginning to condense in the atmosphere, which have got only consistence enough to reflect the violet rays, but the more modern writers attribute it to the colour of the air itself.

In reference to the changing colour of the clouds, Sir Isaac Newton, concluding from a series of experiments that the transparent parts of bodies, according to their several sizes, reflect rays of one colour, and transmit those of another, observes that, when vapours are first raised, they are divided into parts too small to cause any reflection at their surfaces, and thereby do not hinder the transparency of the air; but when they begin to coalesce, in order to form drops of rain, and constitute globules of all intermediate sizes, these globules are capable of reflecting some colours and transmitting others, and thus form clouds of various colours according to their sizes. Mr. Melville controverts this doctrine in its application to the red colour of the morning and evening clouds. Why, he says, should the particles of clouds become at that particular time, and never at any other, of such a magnitude as to separate these colours? and why are they rarely, if ever, seen tinctured with blue and green, as well as red, orange, or yellow? Is it not more credible that the separation of rays is made in passing through the horizontal atmosphere, and that the clouds only transmit the sun's light, as any half transparent colourless body would do? for, since the atmosphere reflects a greater quantity of blue and violet rays than the rest, the sun's light transmitted through it ought to incline toward yellow, orange, or red, especially when it passes through a long tract of air, and thus it is found that the sun's horizontal light is tinctured with a deep orange, and even red, and the colour becomes still deeper after sunset. Hence he concludes that the clouds, according to their different altitudes, may assume all the varieties of colour at sunrising or sunsetting, by barely reflecting the sun's accidental light as they receive it.

The blue teints for the sky are variously composed by different artists. Girtin used indigo and lake. Wilson employed Prussian blue, and finished with ultramarine. Harrison recommends Prussian blue and a little lake. Many of Prout's skies appear worked upon a dead-colouring of very light vermilion: madder-lakes, as more free from yellow than the Florentine or common lake, are preferable; and smalt or cobalt, as cheaper than ultramarine, may occasionally be substituted. Indian yellow and lake, orange chrome, "chrome No. 2," and vermilion, may be used for the glowing horizon at sunrise or sunset, in which case the lights of the clouds must be tinged with the same. For the shadows of clouds Girtin used light or Indian red and indigo, and an occasional addition of lake; Harrison recommends indigo, Indian red, and Roman ochre: a very fine colour may be compounded of indigo, lake, and seppia, finishing with indigo, and experience will point out many others. For morning or evening effects, a light wash of lake over the whole drawing is sometimes used as dead-colouring to destroy green, give warmth to the sky, and harmony to the landscape.

The sky being completed, the student in adapting his colours to the remainder of the piece must never lose sight of the influence which the atmosphere, whether clear and brilliant, or misty and obscured with clouds, should have upon the general tone of his composition, and, proceeding next with the light aërial teints, lay them on the remotest parts of the landscape, gradually brightening into more rich and decided tones as they approach the nearer and more prominent objects, taking care to preserve the same atmosphere throughout.

Those objects which are seen against the strongest light must wear a neutral teint, which may be termed negative harmony; for, were they to be robed in nature's richest teints, the influence of the lustre behind them would, in a great measure, be rendered nugatory, and the effect weak and full of errour; on the contrary, those parts of the piece which are visited by, but not seen against high lights, will admit of a rich and beautiful harmony of colour, without doing violence to truth, or infringing on the economy of nature; and this may be called positive harmony, or a picture of colour.

Every teint should be laid on with clearness and precision, so that the object may receive its proper tone at the first touch of the hair-pencil. Objects which are exposed to the light require higher finish than those which are shrouded in shade; while the minutest parts of the former ought to be touched with the utmost care, the latter will admit of a less laboured delineation.

In the lights of a picture, attention to this rule is indispensable, when it is necessary to distinguish with so much correctness of detail those very objects which in shadow would permit that intimacy of union which would almost make them appear as one. The lights should be composed of warm teints, except they fall on a reflecting surface, when they should be cool, and small, to give a sparkling appearance; but care must be taken not to introduce a cold colour in the principal light, which should be thrown upon the leading feature of a picture, as it conduces to destroy the breadth that should be preserved; while, on the contrary, the opposition or proximity of a cool to a warm colour assists greatly in giving brilliancy to the lights of the picture.

Beside the broad masses of light, a fine effect is frequently produced by the employment of what are termed by painters *accidentals*, an obstruction of the light, by the interposition of clouds, &c., in such a manner that it strikes partially and in sudden gleams, as it is frequently observed to do in nature; these must be accounted for in the management of the sky; and whether caused by such clouds as are in the picture, or are supposed to be beyond its limits, the effect should appear probable.

The works of Gaspar Poussin contain examples of great excellence in this part of the art; a comparison between the prints from his works and those from Claude, being without colour, will show the superiority of the former to the tame and almost insipid gradation of the latter, who, depending upon colouring, in which he greatly excelled, never ventured to introduce, and probably did not feel, those almost electrical effects caused by the skilful management of sudden bursts of light, by Poussin, Rembrandt, Wilson, and other great masters. The humid atmosphere of England causes an endless variety of effects in scenes even of little extent, such indeed as can rarely occur in Italy, and other regions of a drier temperature and purer air. The Poussins, Salvator, and others, who studied in Italy, have generally been indebted to stormy skies for their accidental lights; whilst here objects are thrown into obscurity by mists and vapours; and the bursts of sunshine that occur, as these are partially dispersed, afford that display of mysterious light, shadow, and vapour, which English artists imitate with so much felicity. It is to the observance of these effects, and the ready means afforded by the improvements in the use of water-colours to embody them, that we owe many landscape compositions of the English school, which combine more poetick sentiment, and picturesque expression, than are to be found in the works of the old masters.

Great attention should be paid throughout the picture to avoid violating the rules of aërial perspective, by giving due diminution of light, shadow, and colour, to objects, according to their distance, and the medium through which they are seen, the gradation throughout the picture being taken from the highest light. A picture is said to be wrought from a high, or a low tone, according to that of the principal light; if those are low the rest of the picture must have its depth of shadow and colour regulated accordingly.

The aërial perspective is much more easily produced in water-colour than oil-painting, being often created on paper by the judicious application of a flat camel-hair tool dipped in water, and passed over the sky and distant scenery, which at once subdues the abrupt edges of mountains, &c., and blends the distance into the sky.

If in distributing the light, shadow, and colour over the picture, any object in it, by having too great, or not sufficient strength, appears to come forward, or recede too much, it will be out of keeping and destroy the general effect.

Distant mountains must be hazy and indistinct, but yet also possess an appearance of solidity; their apparent height and distance are very deceitful, for, being powerfully affected by light and shade, they will seem considerably farther from the eye of the spectator under the sombre influence of twilight than under the blaze of midday. When wrapt in clouds, their very indistinctness will give an idea of vastness incompatible with a clear defined outline seen against a cloudless sky. The creeping mist and light-wreathing cloud are never more in place than in mountainous scenery.

G. F. Robson's Llyn Idwal, and other views of North Wales, are unequalled for the powerful and at the same time natural representation of that intense gloom which is cast from a lofty mountain over the intermediate glen, below its elevated summit, thus relieved in dark majesty upon a twilight sky.

Trees are at once the greatest ornament and the most difficult of execution in a landscape. Many painters content themselves with mere masses of foliage, in which all the variety of nature is lost; if the general effect is pleasing, their object is attained, and the majestick oak, the stately elm, and the elegant willow, give place to indefinite forms, the growth of the artist's imagination. The local colours of trees differ so little, and are when removed from the foreground so much affected by the aërial teint, that they must be chiefly distinguished by their forms and individual characteristicks. The great difficulty attending the execution of foliage consists in the necessity there is for the application of general knowledge and rules of art, which must be added to great practice, and a feeling for the beauties of form. Even industry and ability must be a long time exerted, before any thing like freedom and a general character of execution can be obtained, provided the student has only to rely on his own observation of nature, and has no access to the masterly performance of established artists which may save him many years of labour; for, by referring only to nature in the first instance, the painter will be rather apt to imitate the infancy than the maturity of art;

as it is not the number of leaves that give quantity, but variety in their size, tone, distance, depth, and colour; for a small variety of leaves and weeds appear more numerous than a great quantity of the same kind. The neglect of this principle is one of the reasons why those trees which are so much laboured give offence rather than pleasure to an experienced eye; and it appears to have been in many instances the fault of Zuccarelli, who, though he executed his objects with masterly touches, yet was too apt to make the leaves of his trees equal in size on every side, which fault is perpetuated in many engravings from his works; and this always causes a tree, however well executed in form, to appear artificial. But if between two branches firmly executed in colours, a third is seen of a grayish and paler green, with the leaves smaller and less definite in their forms, it will not only give the appearance of a great quantity of leaves, but will help, in some measure, to harmonize the tree with the blue of the sky, or with gray clouds introduced behind the trees, which help to prevent the foliage appearing harsh. But, to require a freedom and facility of execution, it is requisite the learner should often on a small scale copy the regular and even formal representation of clusters of leaves, such as the small branches of ash or a rose-bush would afford, and acquire the power of making neat oval leaves with one or two touches of a full sable hair-pencil; when he can do these quickly, he may relax from their regular forms, and, attending principally to the masses, execute the leaves with the looseness of character observable at a small distance in nature.

Herbage, whether the artist intends to represent the more sober green turf or the golden hue of the waving grain, should be carefully expressed by its general teints, and in the foreground no indefinite patches should be introduced, but the example of John Wynants and others of the same school strictly followed.

Buildings, which contribute much to enrich a composition, require great attention, and perfect adaptation to the scene, and, when Grecian or Gothick architecture is introduced, considerable knowledge of the different styles is necessary.

High roads can be rendered interesting and picturesque by good management of light and colour, and the introduction of appropriate figures.

Rocks vary in shape and colour according to the strata of which they are composed, and, whilst in coast scenery indispensable, from their boldness of form, and the picturesque grouping of which they are susceptible, are little less requisite in those romantick and highly imaginative compositions in which the school of Salvator Rosa takes the lead.

Water depends for effect upon reflection; and in colour, except when so clear and shallow as to allow the bottom to be visible, may be called gray, mingled with the teints of the sky and of the objects reflected. The transparency of the waves depend principally upon flatness of colour and correctness of reflection. To aid the latter, a buoy, a cask, or floating spars are in default of other objects, frequently introduced. The gradation of teint between the nearest waves and the blue distance should be imperceptible, the markings few and carefully introduced, the contour of the waves bold and free, and the spray scattered lightly before the wind.

The colour of salt-water is said to be green, but the cause is not well understood; not only does it reflect the various teints of the passing clouds, ever changing with the rising waves, but its local colour varies with its distance from land and the eye of the spectator, and a chalky or muddy bottom materially affects it. Mr. Shuttleworth here very truly observes, that "to lay down rules so unceasingly changeable would not only confound the student but show the ignorance of the preceptor. The great masters studied from nature in her various moods, and to nature only must the student look if he hopes for success."

To describe minutely the various methods of compounding particular teints would be as tedious as unnecessary; the following directions will suffice for the young student, who must consider them only as a basis, on which in after progress to erect his own superstructure, avoiding the example of some artists who make a favourite colour predominant.

The following are Mr. Shuttleworth's directions for mixing colours:—

Aërial teints.—Indian red and indigo; indigo and lake, occasionally modified with a little seppia, or burnt sienna.

Mist.—Indigo and a little lake; or neutral teint and permanent white.

Foliage, distant.—Indigo, seppia, and lake.

Foliage, near.—Indigo and burnt umber; indigo, burnt sienna, and yellow lake; brown pink and gamboge; indigo, madder brown, and Indian yellow. High lights—burnt and raw sienna; or Italian pink, lake, and burnt sienna; shade with Vandyke brown and indigo; or neutral teint.

Wheat in the ear.—Raw sienna or brown pink and a little burnt sienna.

Hops and vines.—Brown pink and indigo, tempered with burnt sienna or Vandyke brown, according to the maturity of the plant; light burnt umber and a little raw sienna, for the hop-flowers.

Moss.—Brown pink and Vandyke brown.

Distant verdure.—Brown pink and a little neutral teint; burnt sienna and indigo; or brown pink alone; shade with neutral teint, occasionally mixed with a little burnt sienna.

Buildings, distant.—Indigo, lake, and Indian ink.

Buildings, near.—Stone.—Roman ochre; Roman ochre and Indian red; or Indian red and indigo.

Brick.—Indian red and lampblack; Roman ochre, madder brown, and indigo; or Roman ochre and burnt sienna; for forcible touches in the foreground, heighten with Vandyke brown and Cologne earth—for weather-stains, use Roman ochre and Indian red, and indigo and Indian red, laid on alternately and blended together.

Roads, banks, &c., in the foreground.—Burnt sienna, and Indian yellow; Indian red and lampblack; neutral teint and burnt umber; Vandyke brown and lake; or madder brown and coal.

Cliffs, chalk.—White varied with light yellow, shaded with neutral teint and a little Indian red.

Cliffs, sand.—Indian yellow and a little lake, shaded with neutral teint and burnt umber.

Rocks.—Neutral teint and burnt umber, finished with burnt umber and Indian red.

Sand.—Indian red and Indian yellow, shaded with neutral teint and burnt umber.

Water, fresh.—Local colour; indigo, lake, and

Indian yellow. Reflections; colours of the sky, and surrounding objects.

Water, salt.—Distant waves; indigo, finished with cobalt. Near waves, seppia, brown pink or Vandyke brown, and a little indigo.

Shipping.—The hulls of vessels in our navy are black, with white gun streaks; for copper sheathing, dead-colour with seppia, and finish with verdigris; with occasional touches of indigo, lake, or burnt sienna. The masts and rigging may be light or dark, as best suits the sky against which they are seen. Teint the sails with ochre, shaded with neutral teint, and a little burnt umber or seppia.

Small Craft.—Neutral teint, seppia, and a little Indian yellow; Indian red and a little lake, shaded with burnt umber; or raw and burnt sienna, touched occasionally about the water-line with indigo and burnt umber, or other dull greens. Rusty iron anchors, chains, or bolts, colour with Indian red and burnt sienna; indigo or Indian red for gunwales; sails tinged with ochres, burnt umber, &c.

There are many methods of taking out *lights:* the cool ones in water, foam, &c., are frequently erased with the point of a sharp knife; or, having with a damp sable pencil lightly traced them out, blotting-paper or a white handkerchief, gently applied, will take up the colour. For smoke, damp the surface and rub it with soft bread. Mr. Nicholson's composition consists of flake white, ground in oil of turpentine, diluted with an ounce of wax in five ounces of oil of turpentine; this mixture, insoluble in water, will not be displaced during the operation of colouring, after which it must be removed, first by washing it with oil of turpentine, applied with a hog's-hair pencil, and ultimately, having slightly warmed the drawing by washing it with a soft brush dipped in highly rectified spirits of wine: this process is much too inconvenient for general use, the paper in addition having to be strained on a frame instead of a drawing-board, to allow the back to be washed after the mixture is removed, as well as to render it sufficiently transparent to detect the lights when concealed by the colour. The following method is much simpler and of equal efficacy. With an ivory palette-knife, grind a little pipe-clay in weak gum-water; dilute it to the consistency of paste; after sponging the paper, previous to laying on the colours, cover the high lights with this mixture, and work up the drawing as usual. To take out the lights, gently moisten the surface of the paper, when the mixture will continue wet after the surrounding parts are dry; then with a white handkerchief take up the composition, which will leave the lights perfectly clear.

For foliage, lay on the high lights previously in fast colours, and mix the second teint with gum-water: when dry, the point of a moist sable pencil will take off the gum colour and leave the lights bright and distinct.

Body-colours, formed by mixing the common colours with fine gum-arabick, are very useful in adding force to the objects in the foreground.

The finishing touches in *Prout's Architectural Drawings* are given with a reed pen, which he makes free use of also in his foliage; his colouring is thin, and a little marked with mannerism; yet for true taste, and brilliancy of execution, his paintings find no parallel among the works of contemporary artists.

Many fruitless attempts have been made to varnish paintings in water colours; Mr. Charles Robertson's method looks the most promising, but is very troublesome; between each coat of colour the painting is varnished with a solution of isinglass in spirits of wine boiled for three hours, when finished, apply a coat of copal vanish, paste the paper on canvass, and cover the back with firmly-glued tinfoil, to protect the painting against moisture.

In studies from nature, where rapidity of effect and simplicity of execution is an object, the following method will be found very effectual:—Grind a small quantity of burnt and raw umber in spirits of turpentine; soak your paper with the spirit previously and work with the same: with the burnt umber work up your dark teints first, and then the light with raw umber; by using the spirit the edges can be softened off if requisite even when dry.

The drawing will not be injured by water, and will be more permanent than when executed in seppia or Indian ink.

The common lead-pencil may be very much improved, and rendered applicable for most purposes in drawing, by being steeped for about ten days in linseed oil.

LINES ON AN OLD GENTLEMAN.

BY O. W. HOLMES.

I saw him once before,
As he passed by the door—
And again,
The pavement stones resound
As he loiters o'er the ground
With his cane.

They say that in his prime,
Ere the pruning knife of Time
Cut him down,
Not a better man was found
By the crier on his round
Through the town.

But now he walks the streets,
And looks at all he meets,
So forlorn,
And he shakes his feeble head,
That it seemed as if he said,
"They are gone!"

The mossy marbles rest
On the lips that he has pressed
In their bloom;
And the names he loved to hear
Have been carved for many a year
On his tomb!

My grandmamma has said—
Poor old lady, she is dead
Long ago—
That he had a Roman nose,
And his cheek was like a rose
In the snow.

But now his nose is thin,
And it rests upon his chin
Like a staff
And a crook is in his back,
And a melancholy crack
In his laugh.

I know it is a sin
For me to sit and grin
At him here:
But the old three-cornered hat
And the breeches—and all that,
Are so queer!

And if I should live to be
The last leaf upon the tree
In the Spring!
Let them smile, as I do now,
At the old forsaken bough,
Where I cling.

METHOD OF PROCURING AND PRESERVING OBJECTS OF NATURAL HISTORY.

Of Mounting Birds.—To *mount* an animal, as we shall use the word, is to give him the attitude, grace and air of animation, which he possessed while living. A bird is mounted either *fresh* or *prepared* ; in the first case, the operation is performed immediately upon stuffing and skinning ; in the second instance, we suppose that the skin has become dry after this process—in which case it must be softened, in order to receive a proper shape. Subjects generally receive the first preparation at a distance from the spot where they are finally arranged for the cabinet. We shall suppose this last instance.

Take out the stuffing, and return a quantity of similar matter previously dipped in water, taking care not to wet the feathers ; having put the skin to soak in this manner, proceed to the legs, and wind around them quantities of wet tow ; in large birds the legs take some days to soften for which reason you should begin with them first. Put the bird in a vessel or basket and stop out the dry air by covering him with tow or cotton ; place it in a cellar or damp place, till the skin has grown supple ; for small birds, twenty-four hours will suffice ; large ones require three or four days. When you have examined the skin throughout, and find it sufficiently soft, take out the wet stuffing and apply a coat of the preservative : then stuff it for the last time.

Now get ready your wires ; we have already specified their proportionate sizes. Cut one wire for the chief supporter, that is one fourth longer than the length from the beak to the beginning of the tail—we will call this the main wire ; straighten it and sharpen the two ends ; cut two others of equal size, and long enough for the legs ; sharpen one end of each.

Bore a hole through the claw upwards and introduce one of the wires for the legs ; pass it behind the tarsus to the heel, straighten the joint, and continue the wire through the tibia to the body ;—you thus have all the joints of the legs straight, and can bend them into any position you choose ; the wires you will recollect are previously to be passed through the fire.

Take the main wire, and at one third from the end twist a portion of it into a spiral ring; pass the shorter end through the centre of the neck to the head, bore through the cranium with the point of the wire till it comes through in front ; the proportions of the wire must be so managed, that in this position the spiral ring is just below the thighs, and the lower end of the wire going through the rump passes out among the tail-feathers to their extremity ; the wire thus extends through the head, neck, body, and tail, from end to end. Twist the upper ends of the leg-wires with your pincers around the spiral ring, and bend all the wires so as to bring the bird into proper shape.

The central wire should be passed into the neck *after* stuffing ; this is not only the easiest method, but it preserves the neck in its cylindrical form. Even the long neck of a swan should be no exception.

If you desire to have the tail spread, twist the lower extremity of the wire into a ring, or fork it by adding another piece ; these support the feathers in an extended position. All the above despatched, finish the stuffing and sew up ; this last must be done with care, that no traces of the seam remain ; in taking the stitches always pierce the skin on the inside ; if any part be pressed out of shape during the process you may re-adjust the stuffing afterward, by thrusting a large needle or fine awl under the skin.

In setting the legs in position observe that the joints of the heel should jut toward the under part of the tail, and that these joints should be nearer together than the lower extremities of the legs. This is the time for knowing whether the habit of the bird is to *perch* or not—that is whether he alights upon a branch or a flat surface. The study of Natural History alone can give any precise knowledge upon this point ; still we can furnish the reader with such general information as will enable him to avoid any gross errours.

Birds of prey in general perch ; vultures perch or not, at pleasure. In a picture or cabinet, you may put eagles, vultures, and most nocturnal birds of prey upon a heap of rocks.

The tribe of *passeres* constituting the ancient class of pies and ravens in the system of Linnæus, all perch. Some of them as the magpie, crow, &c, may perch or not. Woodpeckers may be struck against any perpendicular body—holding on with the claws, and resting upon the tail.

The other classes of *passeres* are of the perching habit, except some kinds of larks and the house-pigeon. Starlings and blackbirds, in certain circumstances do not perch.

Geese, ducks, and generally all web-footed birds, save the cormorant, do not perch.

Birds which frequent the sea-shore, and generally all that have the tarsus long, and a bare leg, never perch.

Gallinaceous fowl,* for the most part do not perch ; although a few offer occasional exceptions, as the pheasant, peacock, and guinea-hen.

In placing the bird in position, let him not look straight forward if you wish to give him an animated or graceful air ; turn his head somewhat to the right or left ; sometimes you may raise the beak a little. The operator however must consult his own taste.

If the wings are large, and hang out of shape they may be furnished with supporters of wire.

But before placing in the cabinet your subject is to be dried ; for this purpose wrap him carefully in fine cloth or muslin—this will keep the feathers from being disordered. After drying, furnish him with artificial eyes, of the same colour as the living. For birds no larger than a sparrow a mere black dot is sufficient ; for the middle size solid coloured eyes may be used ; but the largest, as ostriches, &c., must have them of blown-glass. To fix the eye, you must first soften the eyelid, take out a little of the stuffing at that place, and return it wet—in an hour or so take it out again, and enlarge the opening ; stick the eye in with gum-water ; arrange the pupils with a needle, that the eyes may not squint—unless you wish to represent the bird in a passion ; we have remarked, that these animals, when enraged, bring the pupils of the eyes toward one another; in a state of repose, they are in the middle of the orbit; when agitated by love, they are turned away toward the outer angle of the eye.

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* Comprising the barn-door fowl, turkey, peacock, pheasant, partridge, &c.

Now with a sharp pair of pincers cut off the top of the wire even with the crest, smooth down the feathers, and your subject is fit for the cabinet.

Remedies for Occasional Difficulties.—1. Sometimes the head of a bird is furnished with a crest or comb, requiring careful handling; or is too large to admit the skin of the neck to be turned over it: make an incision from the crest to the first vertebræ of the neck; and by means of this, prepare the head as before directed.

2. If the bird has a fleshy comb, you may follow two methods; in the first, stretch it out with pins and wires till dry, after which you may paint and varnish it;—in this process, however, the membranes contract, and destroy that appearance of animation, which constitutes the beauty of the subject. In the second method, remove the whole mass and substitute an artificial one of mastick, coloured according to life.*

3. Web-footed fowls should have their claws stretched out with pins in drying; all the scaly parts should receive a coat of spirit of turpentine—as a preservation, and to maintain their brilliancy.

4. In a large bird, if the wings hang down by their own weight, they may be kept in position by wires passed through them—as in the case of the legs.

5. If a bird worth preserving has lost some of his feathers select from some other bird a quantity of feathers which resemble the lost ones; with these you may replace the deficiency, thus:—cut off the quill of each feather, dip the cut end in gum-water and stick it in its proper place upon the skin; when you have completed a row thus, begin another row above them, covering two thirds of each feather in the first row; proceed thus, till the whole vacant space is covered.

6. If you have the skin of a bird in pieces, or if you have two or more of the same kind all partially deficient, you may construct a complete subject by putting together different parts of them all; make a stuffed body of the shape of the bird, and glue on the several pieces with gum-water; they should be all of the same sex and age.

7. The bills and legs are apt sometimes to lose their colour—this may be restored by painting; the paint should be very fine, and prepared with oil of pinks; add a coat of varnish. If the legs have lost their scales, you may remedy this to a certain degree by little bits of parchment, stuck on with gum-water; varnish these likewise.

Of Grouping.—By this term we understand the arrangement of two or more subjects together, so as to represent an action; such as—a falcon grasping a dove within his talons—a partridge covering her brood with her wings, in defending them from the attacks of a weasel or hawk—a pair of doves perching and billing upon a rose-bush—a mocking-bird essaying a vain defence against the fangs of a snake, who is thrusting his head into her nest, &c. Compositions of this sort form a striking and interesting kind of picture, when they are arranged with taste and skill. To this end, the operator should be able to bestow upon each individual, the attitude and expression fitted to denote the particular emotion which he is imagined to feel—as rage, grief, ferocity, love, &c.

Animals have passions like men, and though less in number, they are more energetick; we shall subjoin a short extract from Boitard's work, entitled the *Cabinet of Natural History*, in describing the effects of some of the passions, as witnessed in a few individuals of the feathered tribe; in this he refers to three very common and well-known species, namely the magpie, the blackbird, and the wren.

"*When in a state of repose*, the feathers of the magpie on the upper portion of the body are smoothed flat to the skin; those of the belly slightly raised from it, which makes them a little pendent; the neck drawn in, the tail parallel with the body or but slightly inclined, and the wings fixed in their pectoral cavities; when in this condition, the magpie is always perched.

"The blackbird's feathers when in repose are a little disordered, the neck drawn quite into the breast, the tail somewhat raised, and the wings in a small degree pendent. He should be perched.

"The feathers of the wren are smooth, and the tail parallel. He is always perched.

"*In action*, the body of the magpie is placed horizontally; the neck stretched out, the head turned aside, the feathers all smooth, and the tail raised high; the legs are placed near the middle of the body, and the wings pendent; he may be placed not perching.

"The blackbird's feathers are disordered, the neck a little stretched, the head straight forward and a little raised, the tail set high, the legs bent as if unable to support the body, and the wings very pendent; he may be placed not perching.

"The feathers of the wren are smooth, the tail raised to a vertical position, the neck considerably stretched, the bill pointing downward, the wings pendent, the legs stretched out, and the body parallel to the horizon.

"When a bird is in fear, the neck is stretched out, the feathers flattened very smooth; the beak, the body, and the tail in the same line, and a little hanging forward; the forward extremities of the wings are detached from the body, and the tips close to the tail.

To give a bird the attitude of seizing on its prey, stretch the legs, open the claws, bend down the neck and head, raise the wings high, about three quarters open, and convex above; the tail should form a fan, almost perpendicular and the body be inclined towards the prey.

"If the bird be flying the tail should be horizontal and open, the neck forward and a little on one side, the claws shut and pressed against the breast. Suspend it to the ceiling by a wire or string.

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* Good mastick may be manufactured thus:—Take two parts of whiting, and one part of white lead: grind them in a marble or metal mortar with a little nut-oil, made desiccative as for painting; or if the oil be unprepared it must be very old; then let it ferment twenty-four hours at least; after which add more oil, and grind again till it be soft and ductile, so as not to stick to the fingers. This is good white mastick.

To colour it add during the trituration—lampblack for any degree of dark colour, red-lead for flesh, vermilion for the red parts of certain animals, indigo and red mixed for the violet membranes of the turkey, ochre for yellow, &c. Keep the mastick in a leather bag or vessel; the older it is the better—provided it does not dry. When used it should be softened anew with oil.

"In the transition from fear to anger, the body inclines still farther forward; the beak opens; the pupils of the eye draw toward each other, and give the bird a squinting look; the feathers of the neck ruffle up—those of the lower parts lie flat; the tail rises, and spreads in an arch; the legs bend; and the wings are thrust off from the body—or half open and rise upon the back.

The operator cannot be ignorant of various materials necessary for composing his groups; still there are many things in so general use, that we shall present them to notice here.

The branches upon which birds are generally placed in cabinets are gathered upon the skirts of woody spots; they are commonly the limbs of plum-trees, which have been stunted by the bite of cattle, and become covered with white and yellow lichens; the branch, fixed in the cabinet is adorned with artificial flowers and leaves, fastened on with wire. To imitate the various sorts of mosses, lichens, and short grasses it is customary to use the fine shavings of horn made by turners; these are coloured according to fancy, and sifted over the branch—which has previously been coated with glue or paste. An imitation of rock is effected by brown pasteboard, wetted in thin paste, moulded into a proper shape, and covered with fine sand. Earth is imitated with sand, gravel, coffee-grounds, &c.

Beyond these general ideas, the operator must be left to the guidance of his own taste and ingenuity; groups of the above description possess value both for use and ornament; when arranged with skill and effect, they constitute alike objects of scientifick study and elegant taste.

Taking of Lizards, &c.—Lizards inhabit both land and water. Some kinds, as the Crocodile, are dangerous from their size and the terrible power of their jaws, armed with long and sharp teeth; these you cannot master till you have shot them with a gun, or overpowered them with clubs. Others of a small kind, like tritons and some species of salamanders, dwelling in marshes and ponds, may be caught easily with hooks or nets. A third class are found only in close and damp woody spots, among subterraneous ruins, and under rocks in unfrequented places; among these are the land-salamanders which you may take without difficulty, as they are slow of movement, and have no means of escape or defence.

The most numerous class of lizards are those which inhabit the trunks of trees, old walls with a southerly exposure, slopes of ground with the same aspect, among fallen leaves, and in woody places not sufficiently grown to shade entirely the low shrubs and dead leaves, where they love to hide. These creatures are so quick in their motions, that the eye can scarcely trace their progress; in addition, they are courageous and snappish, and bite with their toothless jaws so firmly, that no method but killing will oblige them to loosen their hold; the wounds which they give, however, are not dangerous. Some of these little creatures are decked in the most brilliant colours; all are very difficult to catch; they must be taken by surprise or artifice, but the first method has the inconvenience almost always of mutilating them irreparably; their tail is extremely delicate, and broken by the slightest blow.

To catch this animal without injury, you must come upon him without being seen, and strike him with a flexible rod so as to hit him upon the back, just between his two pair of legs; thus breaking the back-bone, when you may secure him without difficulty. Some of them have so keen a sight and smell, that it is almost impossible to surprise them; among these are the green and occellated lizard of the south of France. Take a very small hook, and attach to it a horsehair line of three or four threads strongly twisted; bait this with a large fly, and hang it before the door of his dwelling; when he catches a view of it, he will not fail to bite.

Snakes should be hunted with precaution; some of an enormous size, which inhabit the burning plains of Africa, attack and conquer powerful animals by the aid of their prodigious strength and courage It is particularly in hot climates that we find those species the most valuable for their rarity and splendid colours. Cold and temperate countries possess but few. The viper has the upper-jaw armed with one, two, three, and four moveable fangs, which closely resemble the claws of a cat; these fangs have a hollow through the whole of their length, by which the poison is conveyed into the wound. The bite is not commonly mortal; but in many circumstances may become so, especially if the person bitten be not of a robust temperament and healthy blood. Remedies should be promptly applied; the most sure is volatile alkali (sal volatile,) a few drops of which should be swallowed in a glass of water; rub also the wound with the same, and bind on a linen cloth dipped therein.

It would be serviceable here to specify the characters which distinguish the venomous snakes from the harmless, but unfortunately these marks are not sufficiently striking to catch the view at first sight;—at any rate, beware of the serpent with a triangular head, flat at the top, wide toward the body, and with a narrow neck. These reptiles often sleep stretched out upon the rocks in the sun, or upon dry leaves; if you surprise them at this moment, you may be sure their first movement will be to bite or attempt an escape. It seems as if nature, in furnishing them with the most terrible of all weapons, had withheld the privilege of abusing them; for every noxious species is so slow of movement, as to be unable to inflict a bite except by surprise. From the moment you have discovered them, it is quite easy either to shun or attack them with advantage; they are too clumsy to spring upon you, and hardly able to escape by flight.

They should be managed with precaution, not only alive but dead. Serious results have followed the imprudence of persons who have scratched themselves with the fangs of a rattlesnake, dead and dry for several years. There are instances of persons dangerously bitten by the head of a viper, which had been separated from the trunk more than forty-eight hours. Again you must be on your guard, when you have taken one apparently dead; these creatures, when they find themselves hotly pursued and without the means of escape, have the cunning to lie still and counterfeit death; wo to the rash mortal who trusts the deception!

Snakes are fond of rocky and woody spots, lying open during most of the day to the sun, and in the neighbourhood of a marsh or river, whither they go in hot weather to hunt the frogs, shrew-mice, and little birds. Some not content with occasional visits to the banks of rivers, take up their abode there among the stumps and bushes; others keep about the rocks, among the ruins of old buildings, and even in the dunghills of yards little frequented. Every country and village has its particular locality, where they are most abundant; the inhabitants entertain too much dread of these reptiles, to be ignorant of the precise spots.

Upon setting out in pursuit of them, provide yourself with a pair of long-handled nippers or tongs, a leather sack in which you should sprinkle a quantity of snuff, and a net of the following make:—It should be dip-net with very small meshes, or of a substance sufficiently transparent to enable you to see what is enclosed; the upper edge of the hoop to which the net is attached must be set with a row of sharp iron teeth, half an inch long, and not above a quarter of an inch apart; to the hoop attach a handle three or four feet long, obliquely joining the hoop, so that you may hold the mouth of the net flat upon the ground without bringing the handle to a level. With this you may hold the reptile, whether snake or lizard, secure upon the ground; the teeth will prevent his escape underneath, if he be wholly within the circumference of the hoop; and if he be partly without, he will be fast pinned to the earth. In both cases, it will be easy to kill him without tearing the skin. Throw him into your sack, where the snuff will despatch him if he be not previously dead. In the same sack you may put your frogs, toads, lizards, &c.

They may then undergo the following preparation. Wash them in water several times, and extract the contents of the stomach; you may judge of the quantity of these, by the stuffed and prominent condition of the belly. It is well known that a snake no bigger round than the finger, and with a head of the size of the thumb, will swallow a toad as big as the fist; this surprising voracity is owing to the singular conformation of his jaws, whose elastick ligaments permit the enormous distension. When you find a snake's belly stuffed to this degree, hold him up by the tail, and with the other hand squeeze the swallowed mass downward to the mouth, where commonly it will stop; then placing him on a table, force open his jaws by prying within them strongly and repeatedly; when his throat is widely distended, you may draw out the mass by a corkscrew attached to a long handle; after this, wash him again, and dry him by the frequent application of a cloth; you may then put him in spirits.

The best liquor for preserving not only reptiles, but all other subjects for Natural History, without doubt is alcohol or spirits of wine, as this is in no danger of freezing; still it has some disadvantages;—in the first place, it is costly; secondly, it is apt to discolour the subjects when too strong (the proper strength may be fixed at the 18th or 20th degree of Baumè's areometer;) in the third place, it quickly evaporates when the vessel is not hermetically sealed. In a future number we shall give the composition of several liquors, which in many cases may be advantageously substituted. Every sort of alcohol is alike useful for the present purpose, whether manufactured from wine, the peach, potato, grain, or molasses.

If you design to keep a subject in liquor for a great length of time, let it first saturate therein a day or two; then take it out, and wipe off the mucosity which has gathered upon it; after which, put it in fresh liquor. Without this indispensable precaution, the fluids of the animal will unite with the spirit, and weaken it to such a degree that the whole will be unable to preserve it from corruption.

In concluding this part, we may remind the young naturalist who wishes to collect reptiles, that the months of May and June are the best for his purpose; at this time the greater part have cast their slough, and appear in colours much more brilliant than at any later period.

CONGREVE ROCKETS.

"The rocket is a cylinder of hammered iron, differing nothing in shape or proportion from the paper rocket used in innocent fireworks; it is also furnished with a stick as they are, and fired in the same way. The difference and the secret, whatever it may be, is in the composition, which though in appearance is like an ordinary gunpowder paste, is of so firm a consistence, as to equal in hardness the iron which surrounds it. The diameter of the largest rocket hitherto used in bombardment, was eight inches; of the smallest used in field service something less than three; in all cases the length of the cylinder is eight times its diameter. The flight of rockets, too, varies between 1000 and 2500 yards in proportion to their size. Those intended for a bombardment are usually armed with shells, containing twenty pounds of powder, and a strong iron case of combustible matter, whose violence is inextinguishable. For field service, they are either armed with shells, or the top of the rocket is formed into a little mortar, which may be made to discharge at any period of its flight, from fifty to two hundred musket-balls. Three field rockets may easily be carried by an infantry soldier, and they need no other apparatus for firing them than such as may be made from six muskets and a halbert, should not a bank or wall present a more convenient stand. No rocket of more than three hundred pounds has yet been used even in bombardments; but some time ago, Sir William Congreve, the inventor, proposed the use of rockets exceeding a tun in weight; these were to carry each several barrels of gunpowder in a massive case of steel; wherever they struck, the impetus of their prodigious weight would force them indifferently through earth and mason work: thus heaving into the very centre of the enemy's fortifications a mine whose explosion would leave but little trace of the curtain, tower, or bastion on which it should alight."

Pride in a beautiful woman, is like a flaw in a diamond; it lessens its value, spoils its lustre, and remains indelible.

Of all the imperfections in a woman, pride is the most intolerable—for that is hardest to be excused that is never to be mended.

RAFT OF THE ST. FRANCIS.

About three hundred miles up the St. Francis, from its discharge into the Mississippi, commence the rafts of timber by which its navigation is obstructed; these rafts are three in number, the most extensive not exceeding one mile. They commence at the head of the back water on the St Francis, from the overflow of the Mississippi; and if once properly removed, they would not probably again obstruct the channel. Like all other obstacles of a similar character on the western rivers, these rafts are formed of immense masses of heavy timber, piled up and driven compactly together; and in some portions by deposite of alluvion, and the decay of vegetation, a soil of more depth has been formed upon them, supporting living trees, under brush and herbage. In some places a person may cross the St. Francis without beholding any indication of the stream, or being conscious that he is in its vicinity. The river enters above, flows beneath the raft, and again issues below, as if it had just risen from the ground. Some of the rafts rise and fall with the variations of the stream, like a floating bridge. The principal obstruction is opposite the lower extremity of West Prairie; but there are several smaller ones lower upon the stream, and on its various tributaries. In the vicinity of this raft lies an extensive swamp, some eighty miles in length, which, it is thought, may be reclaimed by a canal, which would cost two hundred and fifty thousand dollars. A short distance below the raft, an extent of country fifty miles in length, and about thirty in breadth, was sunk to the depth of one hundred feet, perpendicular, by the earthquake of 1811 and 1812. The effects of this was completely to destroy the channel of the St. Francis for thirty miles, its waters being divided into a number of small streams, none of sufficient depth for navigation. By filling up all those channels excepting one, and cutting that deeper, a good navigation might be obtained, it is thought, most of the year for steamboats. The expense of this undertaking is estimated at fifty thousand dollars.

There is said to be something remarkable in the vast inundation between the St. Francis and the Mississippi. Prior to the earthquake of 1811 and 1812, these bottoms were not flooded: but by that event, this section of country was so shaken and depressed, that the freshets of the St. Francis found their way across the interval to the Mississippi; yet, as a general thing, the banks of the latter stream exceed those of the former height by sixteen feet: a levee of a few feet altitude would, therefore be amply sufficient for every variation of the waters. The eastern bank of the St. Francis, it is believed, should also be leveed, for a distance of one hundred miles from its mouth, to prevent the back water of the Mississippi from overflowing the bottoms, that lie between the streams, in time of flood. The probable expense of removing the rafts and other obstructions to the navigation of the St. Francis, as well as of constructing the necessary levees, is estimated at less than two hundred thousand dollars; and the value of the territory redeemed at nearly *eight millions!* When the St. Francis is once cleared from obstruction to its navigation, it will present one of the noblest streams in the western valley—navigable for a distance of four or five hundred miles, through lands of unrivalled fertility. The redemption of this extensive tract, three hundred miles in length and upward of thirty in breadth, is a subject of deep interest to the State of Missouri. All her southern counties would be greatly profited; a navigable stream would flow past every farm, the health of the region would be improved, the agricultural interest would be advanced, and thirty-six thousand new families would be settled on lands now deemed worse than valueless. The subject, we repeat, is one of vital importance to the southern sections of Missouri, and we trust that her representatives at Washington will duly consider those measures which may be introduced before our national councils, most conducive to her interests.

St. Louis Bulletin.

STEAMBOATS ON LAKE ERIE.

From the Cleveland Herald we copy the subjoined list of Steamboats employed, at present, on Lake Erie:—

NAMES.	CAPTAINS.	TUNS.	BUILT.
Cleveland	Hart	580	1837
James Madison	Bristol	700	1837
Milwaukie	Miller	500	1837
Constellation	Gager	530	1837
Bunker Hill	Nickerson	470	1837
Constitution	Appleby	500	1837
New England	Burnett	450	1837
Gen. Wayne	Pratt	400	1837
Michigan	Allen	462	1833
Thos. Jefferson	Wilkins	428	1835
Sandusky	Titus	387	1834
Columbus	Walker	392	1835
Pennsylvania	Cotton	355	1833
Daniel Webster	Tyler	376	1833
De Witt Clinton	Squier	430	1836
United States	Shook	366	1834
Monroe	Atwood	350	1835
Com. Perry	Wilkison	352	1835
Robert Fulton	Hart	368	1835
North America	Edmunds	361	1834
Rhode Island	———	200	1837
New York	Shepard	325	1833
O. Newberry	———	170	1833
Erie	Edwards	160	1836
Cincinnati	Young	180	1836
Gen. Porter	Norton	352	1834
C. Townsend	Fox	312	1835
Ohio	———	171	1830
Barcelona	———	160	1836
W. F. P. Taylor	Vail	125	1835
Commerce	Stevens	80	1837
Gov. Marcy	M'Kenzie	161	1833
Eclipse	———	240	1833
Major Downing	———	45	1834
Mazeppa	———	66	1836
W. Peacock	———	120	1829
Victory	———	77	1834
Gen. Jackson	———	65	1833
Gen. Brady	———	66	1833
Macomb	Allen	small	1837
Gen. Gratiot	Hanson	62	1831

Many of the above boats are equal in point of strength, speed, and accommodations for passengers to any in the world. Without disparagement of others, we boast of the Cleveland, for beauty, speed, and luxury of furnishings: more competent judges than we are say she will not be surpassed at present. But she will have competitors probably in the three first of the following list of boats not completed; as well as in the Milwaukie of Buffalo which made one trip the last season.

BOATS BUILDING ON LAKE ERIE.

NAMES.	WHERE BUILDING.	TUNS.
Illinois	Detroit	700
Erie	Erie	450
Buffalo	Buffalo	700
Wisconsin	Conneaut	600
Rochester	Cleveland	400
Saginaw	Sandusky	300
Osceola	Ashtabula	400
Chesapeake	Maumee	375
President	Huron	———
Belvidere	Belvidere	———
Osceola	Buffalo	small
Lexington	Black River	400
———	Fairport	———
———	Vermillion	———

The tunnage of the above boats is stated in round numbers, and may not be entirely correct. It is believed they are not greatly erroneous.

Of the boats plying on the Canada side we know nothing. The names of two are Thames and Minnissetunk.

The following list of steamboats which have been lost, broken up, &c., may be worth preserving:

Walk-in-the-water; built in 1818, wrecked near Buffalo in 1821, tunnage 338.

Superiour; 346 tuns, built in 1822, dismantled.

Niagara; 156 tuns, built in 1824; she was broken by collision with the Pennsylvania near Huron, 1837.

Pioneer; 120 tuns, built in 1825, wrecked on the upper lakes, 1836.

Sheldon Thompson; 241 tuns, built in 1825, broken up 1837.

Uncle Sam; 274 tuns, built in 1833, engine taken out the present season.

William Penn; 250 tuns, built in 1836, dismantled 1837.

Chippewa; 45 tuns, built in 1825, broken up in 1828.

Washington; 609 tuns, built in 1833, wrecked on her second trip near Long Point, U. C.

Delaware; 177 tuns, built in 1833, wrecked on Lake Michigan, 1836.

Enterprise; 219 tuns, built in 1825, condemned.

Caroline; 45 tuns, built at Charleston, S. C. in 1822 of live oak; brought to N. York, thence by river and canal to Lake Ontario, where she was employed some time as a ferry-boat; afterward brought to Lake Erie through the Welland canal, and employed upon the Detroit river and elsewhere; seized for smuggling the last summer, taken to Buffalo and sold. The end of this boat is well known.

We find in a list derived from official resources in 1837, the names of several small boats belonging to Detroit which are not given above.—Chicago 186 tuns, Detroit 137 tuns, Don Quixote 51 tuns. Of these three we know nothing more than is given; nor of the Argo, Cincinnati of Detroit, Lady of the Lake and Water Witch more than their names. They are probably very small boats.

BURIAL OF THE INDIAN GIRL.

BY MRS. L. H. SIGOURNEY.

"The only daughter of an Indian woman in Wisconsin Territory, died, of lingering consumption, at the age of eighteen. A few of her own race, and a few of the whites, were at her grave; but none wept, save the poor mother."—*Upper Mississippi Herald.*

A WAIL upon the prairies—
A cry of woman's wo—
That mingleth with the autumn blast,
All fitfully and low.
It is a mother's wailing!—
Hath earth another tone,
Like that with which a mother mourns,
Her lost, her only one?

Pale faces gather round her—
They mark the storm swell high,
That rends and wrecks the tossing soul,
But their cold, blue eyes were dry.
Pale faces gazed upon her,
As the wild winds caught her moan—
But she was an Indian mother—
So, she wept those tears alone.

Long, o'er that wasting idol,
She watch'd, and toil'd and pray'd:
Though every dreary dawn reveal'd
Some ravage Death had made;
Till the fleshless sinews started,
And hope no opiate gave,
And hoarse and hollow grew her voice,
An echo from the grave.

She was a gentle creature,
Of raven eye and tress,
And dovelike were the tones that breath'd
Her bosom's tenderness;—
Save when some quick emotion
The warm blood strongly sent
To revel in her olive cheek,
So richly eloquent.

I said consumption smote her,
And the healer's art was vain;
But she was an Indian maiden,
So none deplored her pain;—
None, save that widowed mother,
Who now, by her open tomb,
Is writhing like the smitten wretch,
Whom judgement marks for doom.

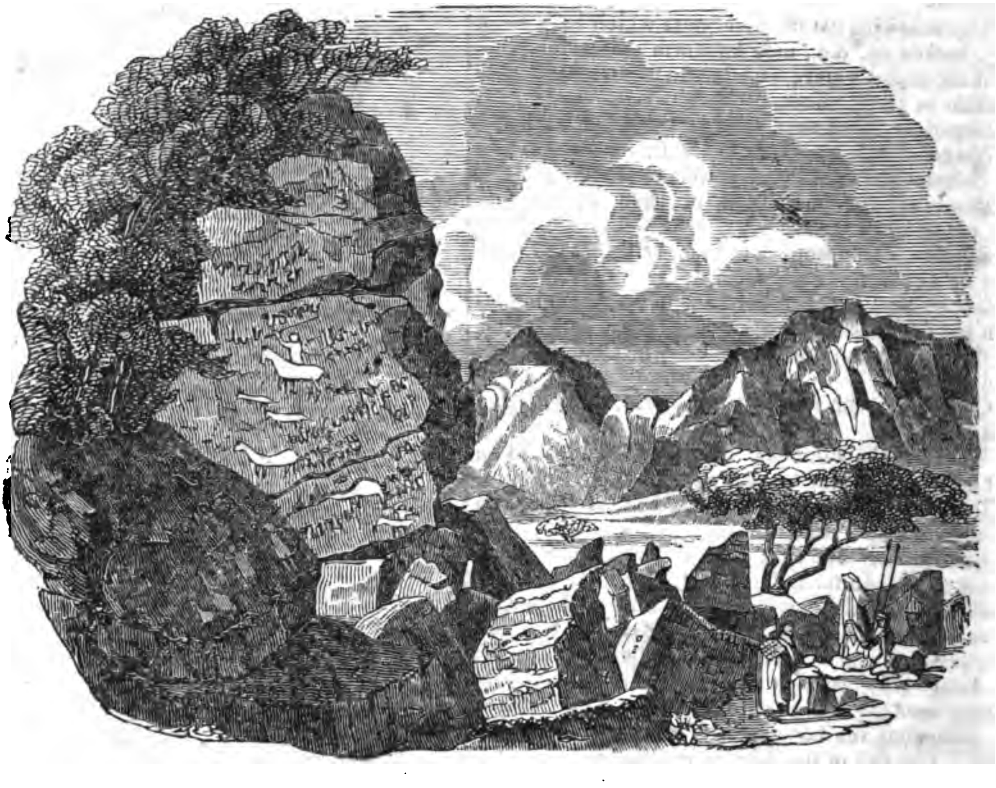
Alas! that lowly cabin,
That couch beside the wall,
That seat beneath the mantling vine,
They're lone and empty all.
What hand shall pluck the tall, green corn,
That ripeneth on the plain,
Since she, for whom the board was spread,
Must ne'er return again?

Rest, rest, thou Indian maiden!—
Nor let thy murmuring shade
Grieve that those pale-brow'd ones with scorn,
Thy burial-rite surveyed:—
There's many a king, whose funeral
A black-robed realm shall see,
For whom no tear of grief is shed,
Like that which falls for thee.

Yes, rest thee, forest-maiden!
Beneath thy native tree;
The proud may boast their little day,
Then sink to dust like thee;
But there's many a one whose funeral
With nodding plumes may be,
Whom nature nor affection mourns,
As now they mourn for thee.

ENGRAVED ROCKS.

Wady Mokatteb is a valley entering Wady Sheikh, nd bordering on the upper regions of the Sinai mountins. It extends for about three hours' march, and n most places its rocks present abrupt cliffs, twenty r thirty feet high. From these cliffs large masses ave separated and lie at the bottom in the valley. The cliffs and rocks are thickly covered with incriptions, which are continued, at intervals of a few undred paces only, for at least the distance of two ours and a half. Burckhardt says, that to copy all of hem would occupy a skilful draughtsman six or ight days. The inscriptions are very rudely exeuted, sometimes with large letters, at others with mall, and seldom with straight lines. The characers appear to be written from right to left; and alhough not cut deep, an instrument of metal must ave been required, as the rock is of considerable ardness. Some of them are on rocks at a height f twelve or fifteen feet, and must have required a adder to ascend to them. The characters are not nown. The superiour of the Franciscans, who isited the place in 1722, observes, "Although we ad among us men who understood the Arabian, reek, Hebrew, Syriack, Coptick, Latin, Armenian, urkish, English, Illyrian, German, and Bohemian anguages, there was not one of us who had the lightest knowledge of the characters engraved in hese hard rocks with great labour, in a country here there is nothing to be had either to eat or rink. Hence it is probable that these characters ontained some profound secrets, which, long before he birth of Jesus Christ, were sculptured in these rocks by the Chaldeans or, some other persons."* This account excited profound attention in Europe: and it was thought by many that the inscriptions might have been framed by the Israelites during their stay in this region, and probably contained irrefragable evidence for the truth of the Mosaick history. Hence copies of them have been anxiously sought and secured. But with the exception of a few in Greek, the character and language remain unknown. "Before they can be all deciphered," says Laborde, "greater progress than has yet been attained must be made in the paleography and ancient languages of the East. The most general opinion is that they were the work of pilgrims who visited Sinai about the sixth century." This seems to us very doubtful. The Greek inscriptions and the crosses on which this conclusion chiefly rests, may indeed have been of that or a later age; but it does not follow that those in the unknown characters necessarily were so too. However, this is of no consequence, for our purpose, which is merely to illustrate by example the practice of charging the living rock with inscriptions; and that example is the more interesting from being taken from a region of so much scriptural interest, and not far from the land of Uz. Although these inscriptions should prove not to be of high antiquity, and, only to record the names and prayers of Jewish and Christian pilgrims to Sinai; the rude manner in which they are exhibited, may well be supposed to be such as belonged to the time when men first began to inscribe on rocks their abiding memorials. It only remains to add that among the inscriptions, appear sometimes extremely rude figures of men and animals, (camels



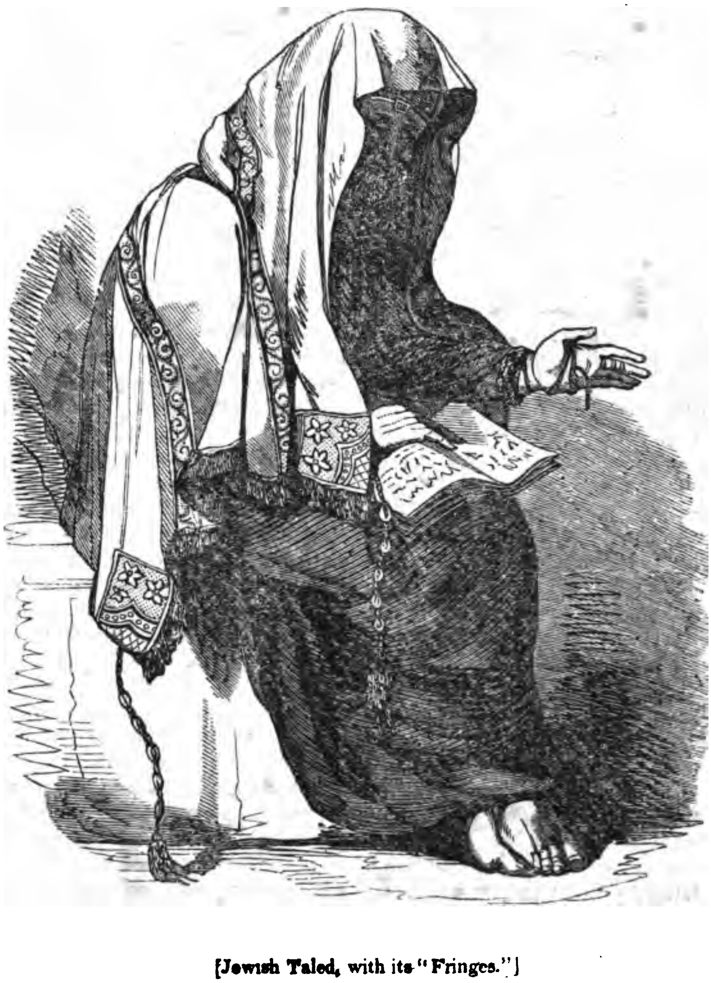
[Engraved Rock in the Ouadi Mokattab.]

goats, &c.,) some of which seem to be of the same date as the original characters, while others seem to belong to a more recent period.

COSTUMES OF THE JEWS.

According to Herodotus, the dress of the Egyptians consisted of a linen garment, over which was worn a white woollen cloak or shawl. The former, which seems to have been often, if not generally, worn without the other, was fringed at the bottom; and as it is probable that the Israelites while in Egypt and till they entered Canaan, conformed to the Egyptian costume, it is thought by Le Clerc and others, that the "fringes" were derived from the Egyptians. It may as well have arisen, however, from the Egyptians having borrowed a Jewish usage at some time in the course of the long period between the times of Moses and Herodotus.

Concerning the form of this fringe, perhaps nothing positive can be determined. Some think that the fringes were no other than strings with tassels at the end fastened to the four corners of the upper garment, the proper use of these strings being to fasten the corners together. Of this opinion are the modern Jews, as appears by the following description, taken from "Levi's Ceremonies of the Jews:"—"Every male of the Jewish nation is obliged to have a garment with fringes at the four corners; and every morning when they put on these garments they take the fringes in their hand, and say; 'Blessed art thou, O Lord our God, king of the universe, who hast sanctified us with thy commandments, and commanded us the commandment of the fringes!'" He describes the robe in question, as follows:—"It is made of two square pieces with two long pieces like straps joined to them, in order that one of the said pieces may hang down before upon the breast, and the other behind; at the extremity of the four corners are fastened the strings, each of which has five knots besides the tassel, signifying the five books of the law." The Rabbins, under whose instruction this profound analogy has been established, further observe that each string consisted of eight threads, which, with the number of knots and the numeral value of the letters in the word *zizith*, make 613, which is, according to them, the exact number of the precepts in the law. From this they argue the importance of this command, since he who observes it they say, in effect observes the whole law!



[Jewish Taled, with its "Fringes."]

BIOGRAPHY.

JOHN ANDRE.

[From Knapp's American Biography.]

JOHN ANDRE, aiddecamp to Sir Henry Clinton, and adjutant-general of the British army in the Revolutionary war, was born in England, in 1749. His father was a native of Geneva, and a considerable merchant in the Levant trade; he died in 1769. Young Andre was destined to mercantile business, and attended his father's counting-house, after havng spent some years for his education at Geneva. He first entered the army in January, 1771. At this ime he had a strong attachment to Honoria Sneyd, who afterward married Mr. Edgeworth. In 1772 he visited the courts of Germany, and returned to England in 1773. He landed at Philadelphia in September 1774, as lieutenant of the Royal English Fusileers; and soon proceeded by way of Boston, o Canada to join his regiment. In 1775 he was aken prisoner by Montgomery, at St. John's; but was afterward exchanged, and appointed captain. In the summer of 1777 he was appointed aid to Gen. Grey, and was present at the engagements in New Jersey and Pennsylvania, in 1777 and 1778. On the return of Gen. Grey, he was appointed aid o Gen. Clinton. In 1780 he was promoted to the rank of major, and made adjutant-general of the British army.

After Arnold had intimated to the British, in 1780, his intention of delivering up West Point to them, Major Andre was selected as the person, to whom he maturing of Arnold's treason, and the arrangements for its execution should be committed. A correspondence was for some time carried on beween them under a mercantile disguise and the eigned names of Gustavus and Anderson; and at ength, to facilitate their communications, the Vulure sloop-of-war moved up the North river, and took a station convenient for the purpose, but not so near as to excite suspicion. An interview was agreed n, and in the night of September 21, 1780, he was aken in a boat, which was despatched for the purose, and carried to the beach, without the posts of oth armies, under a pass for John Anderson. He met General Arnold at the house of a Mr. Smith. While the conference was yet unfinished daylight pproached; and to avoid the danger of discovery, was proposed that he should remain concealed till he succeeding night. He is understood to have refused to be carried within the American posts, ut the promise made him by Arnold to respect this bjection was not observed. He was carried within hem contrary to his wishes and against his knowledge. He continued with Arnold the succeeding ay, and when on the following night, he proposed o return to the Vulture, the boatman refused to carry im, because she had during the day shifted her ation, in consequence of a gun having been moved o the shore and brought to bear upon her. This mbarrassing circumstance reduced him to the necessity of endeavouring to reach New York by land. Yielding with reluctance to the urgent representaions of Arnold, he laid aside his regimentals, which he had hitherto worn under a surtout, and put on a uit of plain clothes; and receiving a pass from the merican general, authorizing him, under the feigned name of John Anderson, to proceed on the publick service to the White Plains, or lower if he thought proper, he set out on his return in the evening of the twenty-second, accompanied by Joshua Smith, and passed the night at Crompond. The next morning he crossed the Hudson to King's ferry on the east side. A little beyond the Croton, Smith deeming him safe, bade him adieu. He had passed all the guards and posts on the road without suspicion, and was proceeding to New York in perfect security, when September twenty-third, one of the three military men, who were employed with others in scouting-parties between the lines of the two armies, springing suddenly from his covert into the road, seized the reins of his bridle and stopped his horse. Instead of producing his pass, Andre with a want of self-possession, which can be attributed only to a kind Providence, asked the man hastily where he belonged, and being answered, "to below," replied immediately, "and so do I." He then declared himself to be a British officer, on urgent business, and begged that he might not be detained. The other two militia men coming up at this moment, he discovered his mistake; but it was too late to repair it. He offered them his purse and a valuable watch, to which he added the most tempting promises of ample reward and permanent provision from the government, if they would permit him to escape; but his offers were rejected without hesitation.

The militia men, whose names were John Paulding, David Williams, and Isaac Van Wart, proceeded to search him. They found concealed in his boots exact returns, in Arnold's handwriting, of the state of the forces, ordnance, and defences at West Point and its dependancies; critical remarks on the works, and an estimate of the men ordinarily employed in them, with other interesting papers. Andre was carried before Lieutenant-Colonel Jameson, the officer commanding the scouting parties on the lines, and regardless of himself, and only anxious for the safety of Arnold, he still maintained the character which he had assumed, and requested Jameson to inform his commanding officer, that Anderson was taken. A letter was accordingly sent to Arnold and the traitor, thus becoming acquainted with his danger, escaped. The narrative of the bearer of this letter, Mr. Solomon Allen, is given in the sketch of his life; it differs in several respects from the account of the affair in the Encyclopædia Americana, and throws light upon circumstances which have been heretofore obscure.

A board of general officers, of which Major-General Greene was president, and the two foreign generals, Lafayette and Steuben, were members, was called to report a precise state of the case of Andre, who had acknowledged himself adjutant-general of the British army, and to determine in what character he was to be considered, and to what punishment he was liable. He received from the board every mark of indulgent attention; and from a sense of justice, as well as of delicacy, he was informed on the first opening of the examination, that he was at perfect liberty not to answer any interrogatory which might embarrass his own feelings. But he disdained every evasion, and frankly acknowledged every thing which was material to his condemnation.

"I came," said he, "to hold a communication with a general officer of the American army, by the order of my own commander. I entered the American lines by an unquestionable authority: when I passed from them it was by the same authority. I used no deception. I had heard that a Provincial officer had repented of the course he had taken, and that he avowed, that he never meant to go so far as he had gone in resisting the authority of his king. The British commander was willing to extend to him the king's clemency; yea, his bounty, in hopes to allure others to do the same. I made no plans; I examined no works;—I only received his communications, and was on my way to return to the army, and to make known all that I had learned from a general officer in your camp. Is this the office of a spy? I never should have acted in that light, and what I have done is not in the nature of a spy. I have noted neither your strength, nor nakedness. If there be wrong in the transaction, is it mine?

"The office of a spy, a soldier has a right to refuse; but to carry and fetch communications with another army, I never heard was criminal. The circumstances which followed after my interview with General Arnold, were not in my power to control. He alone had the management of them.

"It is said that I rode in disguise. I rode for security, incog. as far as I was able, but other than criminal deeds induce one to do this. I was not bound to wear my uniform any longer than it was expedient or politick. I scorn the name of a spy; brand my offence with some other title, if it change not the punishment, I beseech you. It is not death I fear. I am buoyed above it by a consciousness of having intended to discharge my duty in an honourable manner.

"Plans, it is said, were found with me. This is true; but they were not mine; yet I must tell you, honestly, that they would have been communicated if I had not been taken. They were sent by General Arnold to the British commander, and I should have delivered them. From the bottom of my heart I spurn the thought of attempting to screen myself by criminating another; but as far as I am concerned, the truth shall be told, whoever suffers. It was the allegiance of General Arnold that I came out to secure. It was fair to presume that many a brave officer would be glad, at this time, to have been able to retrace his steps; at least we have been so informed. Shall I, who came out to negotiate this allegiance only, be treated as one who came to spy out the weakness of a camp? If these actions are alike, I have to learn my moral code anew.

"Gentlemen officers, be it understood that I am no supplicant for mercy; that I ask only from Omnipotence, not from human beings. Justice is all I claim; that justice which is neither swayed by prejudice nor distorted by passion; but that which flows from honourable minds, directed by virtuous determinations. I hear, gentlemen, that my case is likened to that of Captain Hale, in 1776. I have heard of him and his misfortunes. I wish that in all that dignifies man, that adorns and elevates human nature, I could be named with that accomplished, but unfortunate officer. His fate was wayward and untimely he was cut off yet younger than I now am. But ours are not parallel cases. He went out knowing that he was assuming the character of a spy; he took all its liabilities on his head, at the request of his great commander. He was ready to meet what he assumed, and all its consequences. His death the law of nations sanctioned. It may be complimentary to compare me with him, still it would be unjust. He took his life in his hand when he assumed the character and the disguise. I assumed no disguise, nor took upon myself any other character than that of a British officer, who had business to transact with an American officer.

"In fine, I ask not even for justice; if you want a victim to the manes of those fallen untimely, I may as well be that victim as another. I have in the most undisguised manner given you every fact in the case. I rely only on the proper construction of these facts. Let me be called any thing but a spy. I am not a spy; I have examined nothing—learned nothing—communicated nothing but my detention to Arnold, that he might escape, if he thought proper so to do. This was, as I conceived, my duty. I hope the gallant officer, who was then unsuspicious of his general, will not be condemned for the military errour he committed.

"I further state that Smith, who was the medium of communication, did not know any part of our conference, except that there was some necessity for secrecy. He was counsel in various matters for General Arnold, and from all the intercourse I had with him—and it was Smith who lent me this dress-coat of crimson, on being told by General Arnold that my business was of that private nature that I did not wish to be known by English or Americans—I do not believe that he had even a suspicion of my errand. On me your wrath should fall if on any one; I know your affairs look gloomy, but that is no reason why I should be sacrificed. My death can do your cause no good. Millions of friends to your struggle in England, you will lose if you condemn me. I say not this by way of threat, for I know brave men are not awed by them; nor will brave men be vindictive because they are desponding. I should not have said a word had it not been for the opinion of others, which I am bound to respect.

"I have done. The sentence you this day pronounce, will go down to posterity with exceeding great distinctness on the page of history; and if humanity and honour mark this day's decision, your names, each and all of you, will be remembered by both nations, when they have grown greater and more powerful than they now are; but if misfortune befalls me, I shall, in time, have all due honours paid to my memory. The martyr is kept in remembrance when the tribunal that condemned him is forgotten. I trust this honourable court will believe me when I say, that what I have spoken, comes from no idle fears of a coward. I have done."

The court deliberated long; and at last came to the decision, *that Major Andre was a spy, and ought to suffer death.* He was calm as a philosopher, when the award of the court was read.

The morning of the second of October, 1780, dawned upon the American army. This time was fixed for the execution of the prisoner. It was some distance from the prison to the place of execution, and this the prisoner desired to walk. There had been some fog during the night, which was now settling about the surrounding mountains. Some of the leaves had begun to wear an autumnal appearance. The army was drawn out to witness the sad spectacle. He passed through files of soldiers, on

As when two kennels in the street,
  Swell'd with a recent rain,
In gushing streams together meet,
  And seek the neighbouring drain.

So met these dung-born tribes in one,
  As swift in their career,
And so to Newbridge they ran on—
  But all the cows got clear.

Poor Parson Caldwell, all in wonder,
  Saw the returning train,
And mourn'd to Wayne the lack of plunder,
  For them to steal again.

For 'twas his right to seize the spoil, and
  To share with each commander,
As he had done at Staten Island
  With frost-bit Alexander.

In his dismay the frantick priest
  Began to grow prophetick,
You had swore, to see his lab ring breast,
  He'd taken an emetick.

I view a future day, said he,
  Brighter than this day dark is,
And you shall see what you shall see,
  Ha! ha! one pretty Marquis;

And he shall come to Paules-Hook,
  And great achievements think on,
And make a bow and take a look,
  Like Satan over Lincoln.

And all the land around shall glory
  To see the Frenchmen caper,
And pretty Susan tell the story
  In the next Chatham paper.

This solemn prophecy, of course,
  Gave all much consolation,
Except to Wayne, who lost his horse
  Upon the great occasion.

His horse that carried all his prog,
  His military speeches,
His corn-stalk whiskey for his grog,
  Blue stockings and brown breeches.

And now I've closed my epick strain,
  I tremble as I show it,
Lest this same warrio-drover, Wayne,
  Should ever catch the poet.

A SINGULAR PRISON AMUSEMENT.

"Stripped, and re-clothed in rags which were dropping to pieces, his hands and feet heavily ironed, the prisoner was thrown into one of the most noisome dungeons of the fortress. A sprinkling of straw formed his bed; covering it had none. The only light and air which penetrated into this den of torment came through a loop-hole, which narrowing gradually from the inside to the outside had a diameter of not more than five inches at the farthest extremity. This loop-hole was secured and darkened by a fourfold iron grating, so ingeniously contrived that the bars of one net-work covered the instertices of another; but there was neither glass nor shutters to ward off the inclemency of the weather. The interiour extremity of this aperture reached within two feet and a half of the ground, and served the captive for a chair and a table, and sometimes he rested his arms and elbows on it to lighten the weight of his fetters. Shut out from all communication, with his fellow-beings, Latude found some amusement in the society of the rats which infested his dungeon. His first attempt to make them companionable was tried upon a single rat, which in three days by gently throwing bits of bread to it, he rendered it so tame that it would take food from his hands. The animal even changed its abode and established itself in another hole, in order to be nearer to him. In a few days a female joined the first comer. At the outset she was timid; but it was not long before she acquired boldness, and would quarrel and fight for the morsels which were given by the prisoner. 'When my dinner was brought in,' says Latude, 'I called my companions; the male ran to me directly; the female according to custom came slowly and timidly, but at length approached close to me and ventured to take what I offered her from my hand. Some time after, a third appeared who was much less ceremonious than my first acquaintances. After his second visit he constituted himself one of the family, and made himself so perfectly at home that he resolved to introduce his comrades. The next day he came, accompanied by two others, who in the course of the week brought five more; and thus, in less than a fortnight, our family circle consisted of ten large rats and myself. I gave each of them names which they learned to distinguish. When I called them they came to eat with me, from the dish or off the same plate; but I found this unpleasant, and was soon forced to find them a dish for themselves, on account of their slovenly habits. They become so tame that they allowed me to scratch their necks, and appeared to me pleased when I did, but they would never permit me to touch them on the back. Sometimes I amused myself with making them play, and joining them in their gambols. Occasionally I threw them a piece of meat scalding hot; the most eager to seize it, burned themselves, cried out, and left it; while the less greedy, who had waited patiently, took it when it was cold, and escaped into a corner, where they divided their prize: sometimes I made them jump up, by holding a piece of bread or meat suspended in the air.' In the course of a year his four-footed companions increased to twenty-six. Whenever an intruder appeared he met with a hostile reception from the old standers and had to fight his way before he could obtain a footing. Latude endeavored to familiarize a spider but in this he was unsuccessful."

POPULAR MEDICAL OBSERVATIONS.

EDUCATION OF GIRLS.

The following directions, by an experienced physician, for the management of girls during the period of their education, should be carefully studied by every one engaged in the important task of rearing a family of children.

The young people should rise early in summer, and in winter as soon as it is light. In both seasons, some agreeable occupation should be the attraction to call them out of bed, rather than mere compliance with a strict rule. As soon as they rise, they should be presented with a portion of bread, or bread and milk. The child may be considered as unwell from a permanent cause, or labouring under transient indigestion, who refuses such articles soon after rising—an hour is too long for a child, especially if at all delicate, to remain in the morning without food.

The interval of an hour should always be devoted to some play or active exercise; a breakfast of milk or some of its simple preparations should succeed. Whatever fluids are taken at breakfast, should not be above a tepid warmth; in the summer season, when the body is not heated or in a state of perspiration, they should be of the temperature of the atmosphere. The previous exertion will prevent any one from sitting down chilly to their meal. Milk constitutes so important an article in the diet of children, that every exertion should be made to ensure a constant supply, and to obtain it perfectly pure.

After breakfast a *moderate* walk of twenty minutes may be allowed. Much exertion would have a tendency to disturb digestion. But even considerable exertion, with pleasurable feelings, will be far less prejudicial, than reluctant occupation in a posture by which pressure is made on the stomach.

Two hours of sedentary occupation may succeed —in a temperature not below sixty degrees of the thermometer in common use.

Of what they read, children should be required to give the substance in their own words—sometimes, when they are old enough, in writing, and sometimes in speaking. It is better to give nothing to be learned, in order to be repeated verbatim, except, perhaps, the multiplication table. Committing passages to memory should be trusted to a sense of their beauty; without this, the passages will soon be forgotten—and children are fretted and injured by frequent *tasks* of this nature. The suffering of the body through the medium of the mind, is a thing every day exemplified in the most sudden manner—but the gradual effect of this cause is not the less manifest to close observers. It assists in accounting for a phenomenon, which the female sex exhibits, perhaps, most frequently in early life. What is alluded to, is the very opposite characters presented by the same individual at different periods. How often is it found that those very females are most subject to depression of spirits, whose infancy and childhood were distinguished by an extraordinary degree of sprightliness. This change is produced most generally by repeated trifling vexations, often resulting from an injudicious mode of education—rarely from a single misfortune.

In about three hours after breakfast, some plain and simple food, in very moderate quantity, should be distributed. Three hours are the very utmost that a child, particularly if at all weakly, should be allowed to go without sustenance. Every quarter of an hour after hunger begins to be urgent, adds its share to the mass of mischief, which a variety of causes has most commonly conspired to accumulate.

An hour for work and study may intervene before dinner. To dinner of the plainest animal food, and to some entertaining reading or communication on the part of the teacher, during a simple dessert, an hour may with propriety be devoted. In winter a brisk walk or cheerful play should succeed—and then school-exercises for an hour or two. But during the period of sitting, the kind of employment should be twice or thrice changed. Some grateful preparation of milk, as rice-pudding, custards, blancmange, or preserved fruit, should be served in place of tea. These articles are particularized, because we often see over-anxious parents deprive children of innocent and agreeable articles on account of their health. Individual peculiarities, which cause certain articles to disagree with the stomach, will soon show themselves—otherwise, few plain eatables disagree with children, especially active children. To prevent needless privations is of some importance—it is of more to prevent attention being wasted on frivolous precautions. Many a mother is heard to cry—"My dear, don't eat that—it will make you sick!" It would be well could we hear a few say with equal emotion—"don't do that—it will make you *sickly*:" or rather could we see them manage with constant reference to this idea.

The last-mentioned refreshment should, in fine weather, be followed by a botanical excursion—at other seasons, by some active in-door exercise, in which, as in every thing else, the governess, or an assistant, should join. After this, at an early hour, the children should retire to bed. At all times, exposure to damp must be guarded against.—In cold weather, the pupils should be examined, that proper precautions against nightly chills may be taken when required.

Under twelve years of age, it should be an invariable rule, that the hours of close application should never exceed those of amusement and exercise. "The children," observes Dr. Beddoes, "that have made, within my knowledge, the quickest progress —felt the deepest interest in knowledge—and retained their acquisitions most firmly, were never detained at their books above an hour *at a time*, and seldom above half that time. So perpetually true is it, that the other most valuable objects are best secured by the very means which a regard to health enjoins."

Proficiency in musick and drawing should be given up to a mature age—indeed until the system has become hardy, and the pupil is confirmed in active habits. Even when a love of bodily exertion—a facility in seizing ideas, and a power to resist the inclemency of the weather, have been acquired, some plan should still be devised, by which they may be retained. One day in the week, for example, every pupil should abandon her bench, her book and needle, for a long excursion.

DISEASES OF ARTISANS.

Gilders are exposed to the diseases following the absorption of mercury, and the inhalation of its vapours; since it is by the aid of this metal that the process of gilding is performed. The union of mercury and gold by means of heat which disengages largely the fumes of the former will give rise in persons exposed to them, to giddiness asthma, partial palsy, and a death-like paleness of visage. Preceding these constitutional effects are the more common ones of ulcers in the mouth, salivation, nniversal languor, and trembling by which the person affected is unable to raise his hand to his mouth; and even the act of swallowing is rendered convulsive. On recovering in a degree from extreme debility and exhaustion there remains great irritability and an especial intolerance of sound. At times there is an insufferable stammering produced by the deleterious action of mercury.

Miners cannot work for a longer period than three years in quicksilver mines, nor more than six days at a time. Convulsions, tremors, palsy, and vertigo, are said to be the consequence of exposure in this way; and asthma is to this class a very common harassing and fatal disease. We read in the transactions of the Royal Society for 1665, that one of the workmen, having been so rash as to continue six months in succession in this employment, was so thoroughly impregnated with the mercury, that on placing a piece of copper on his lips, or on rubbing it with his fingers it was whitened in a short time.

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Glaziers of pottery, making use of lead largely for their manufacture, are subject to nearly a similar train of evils as those just enumerated, together with enlarged spleen, (ague cake,) dropsical swellings, and the loss of their teeth. Their faces are cadaverous and leaden like the metal they employ. Palsy of the limbs, and more particularly of the arms, together with that of the right side, the muscles of which potters more continually exercise, are among the effects of the vapours from the lead. Consumption of the lungs is also frequent from the same cause

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Makers of glass are subject to disease caused by sudden vicissitudes of temperature—great heat, followed by a cool air. They are generally thin and feeble, liable to violent or acute disease, or protracted remittent fever. Their eyes are weak and inflamed and their skin irritated by various eruptions; of course pleurisies, asthma, and fixed catarrh, are common effects of their exposure. A rule prevails in some glass manufactories, and ought to be generally adopted that the workmen shall be employed only six months in the year, winter and spring, and that after forty years of age they retire from the occupation.

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Stone Cutters and **Quarrymen** suffer by inhaling the volatilized particles given out in cutting and quarrying stone; and if they continue regularly at this kind of work, they fall victims to sundry diseases of the lungs, before they have passed the maturity of life.

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Blacksmiths, Locksmiths, Gunners, and **Founders,** are subject to diseases dependant on the extremes of temperature to which they are exposed, the constrained attitude which they are frequently obliged to keep, and the light and heat and the metallick particles given out from the iron on which they work. Hence inflammations of the eyes and diseases of the lungs, together with indigestion and all its consequences, are common among them.

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Plasterers and **Makers of Lime** suffer from the gases disengaged as well as from the great moisture attracted by the lime. Plasterers, also, must feel the bad effects of the excessive dampness of the rooms which they are employed on. They are affected with laborious breathing, have a wan pallid visage, and digest badly.

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The Cucumber.—In regard to this vegetable, which, in the summer season, forms, with our citizens, so prominent a dish at almost every meal, Dr. Abernethy, the celebrated surgeon, observes, "peel it, slice it down into pieces, put vinegar and pepper to it, and then—throw it away." And this, probably, is the very best advice that can be given in reference to the manner of using it. Almost entirely devoid of any alimentary principle, the only possible motive that can be assigned for eating the cucumber, is merely the gratification of the palate—to the nourishment of the body it is totally unadapted.

The principal mischief produced by the use of this fruit, and which has caused it to be ranked among the most unwholesome articles served at our tables, arises, independent of an acrid principle which it is supposed to contain, from indigestibility; in other words, its insolubility in the stomach. In consequence of this, it is retained in the latter organ for a long time, producing more or less uneasiness in every instance; and in the dyspeptick, the gouty, and those of a nervous and feeble constitution, giving rise to violent pains, cramp, and other severe affections.

By an individual in full health, and engaged constantly in active out-door exercise, but little inconvenience would probably be experienced from the use of the cucumber, in any form. By all, however, under different circumstances, it is an article of diet which it would be well entirely to relinquish, whether in its simple state, or in the various modes of preparation by which its injurious effects have been attempted to be counteracted.

PRACTICE OF WESLEY IN REGARD TO SLEEP.

The celebrated John Wesley, who paid every attention to the best means of invigorating his body, in order that he might be enabled to exert himself for the general benefit of his fellow-creatures, to the utmost his corporeal and mental powers would allow, informs us, that he had been accustomed to awake every night about twelve or one o'clock, and lay without sleeping for sometime; he, therefore, very justly concluded, that this was caused by his lying in bed longer than nature required. To be satisfied upon this point, he procured an alarum, which awakened him next morning at seven, nearly an hour earlier than his usual time of rising. He still lay awake at night. The ensuing morning he rose at six; but notwithstanding this, he lay awake the second night. The third morning he rose at five; but, nevertheless, lay awake the third night. His next hour of rising was at four, and lying no longer awake, he, for a period of above sixty years, continued the same practice; and, taking the year round, never lay awake for a quarter of an hour at a time, during a month. He justly adds, that by the same experiment, rising earlier and earlier every morning, any person may discover how much sleep he really stands in need of. Mr. Wesley was in the habit of going to bed at ten, so that by rising at four, he had six hours uninterrupted sleep, which he considered to be sufficient for his own health; he, however, very properly remarks, that invalids and persons of a delicate constitution, and those accustomed to much bodily fatigue during the day, may require seven or eight hours' sleep.

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